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IN THE UNITED STATES DISTRICT COURT
FOR THE CENTRAL DISTRICT OF CALIFORNIA

UNITED STATES OF AMERICA, Plaintiff, v. LOCKHEED CORPORATION, CITY OF BURBANK, CALIFORNIA, a Charter City, and WEBER AIRCRAFT, INC., Defendants.	Civil Action No. CONSENT DECREE

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WHEREAS, the United States of America ("United States"), on behalf of the Administrator of the United States Environmental Protection Agency ("EPA"), has filed concurrently with this Consent Decree ("Consent Decree" or "Decree") a complaint in this matter pursuant to the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. § 9601 et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986, Pub. L. No. 99-499, 100 Stat. 1613 (1986) ("CERCLA"), seeking to compel the Defendants in this action to perform certain remedial actions and to recover certain response costs that have been and will be incurred by the United States in response to alleged releases and threatened releases of hazardous substances from a facility as defined in Section 101(9) of CERCLA, 42 U.S.C. § 9601(9), known as the Burbank Operable Unit Site ("the Site"), located in Burbank, California; and

WHEREAS, the Burbank Operable Unit Site is a part of the San Fernando Valley Superfund site #1 (also known as the North Hollywood Area Superfund site), which was listed on the National Priorities List ("NPL") in June of 1986, pursuant to CERCLA Section 105, 42 U.S.C. § 9605; and

WHEREAS, the United States alleges that the past, present, and/or potential migrations of "hazardous substances," as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), from the Site constitute actual and/or threatened "releases," as defined in Section 101(22) of CERCLA, 42 U.S.C. § 9601(22), and further alleges that the Lockheed Corporation ("Lockheed"), Weber Aircraft,

Inc. ("Weber"), and the City of Burbank, California (the "City") are persons subject to liability under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a); and

WHEREAS, Lockheed, Weber and the City are persons, as defined in Section 101(21) of CERCLA, 42 U.S.C. § 9601(21); and

WHEREAS, pursuant to Sections 121 and 122 of CERCLA, 42 U.S.C. §§ 9621 and 9622, the United States, Lockheed, Weber and the City have stipulated and agreed to the making and entry of this Consent Decree prior to the taking of any testimony, and in settlement of the claims alleged against Lockheed, Weber and the City in the complaint; and

WHEREAS, the United States, Lockheed, Weber and the City have agreed upon a settlement pursuant to which Lockheed is obligated to fund and perform certain remedial work at the Site and to make payments to the United States, the City is obligated to fund and perform certain remedial work, and Weber is obligated to contribute to the funding of certain remedial work; and

WHEREAS, the United States, Lockheed, Weber and the City agree that the settlement of these claims is made in good faith and in an effort to avoid expensive and protracted litigation but without any admission or finding of liability or fault as to any allegation or matter;

NOW, THEREFORE, it is ORDERED, ADJUDGED, AND DECREED as follows:

I. DEFINITIONS

A. "Burbank Well Field" or "Well Field" shall mean the area within the political boundaries of the City encompassing Burbank Public Service Department wells 6A, 7, 10, 11A, 12, 13A, 14A, 15, 17 and 18, as shown on Appendix C. (This Appendix contains corrections to the well numbers shown in Figure 2 of the Explanation of Significant Differences ("ESD").

B. "Covered Matters" shall consist of any and all civil liability to the United States for causes of action arising under Sections 106 and 107(a) of CERCLA and Section 7003 of the Resource Conservation and Recovery Act ("RCRA") for performance of the Work; all Past Response Costs; and all Future Response Costs that are incurred by the United States and paid by Lockheed with respect to the Site prior to EPA's issuance of a Certificate of Completion pursuant to Section XXXIV (Termination and Satisfaction). Covered Matters specifically does not include performance of any Remedial Investigation/Feasibility Study ("RI/FS") other than that already completed for the Burbank Operable Unit; additional response actions that may be implemented pursuant to the final remedy or pursuant to any future Explanation(s) of Significant Difference (other than actions that Settling Work Defendants have agreed to perform pursuant to Subpart F of Section VII (Work To Be Performed)), Record(s) of Decision or Amendment(s) to any Record of Decision; costs or activities related to any operable unit other than the Burbank Operable Unit, including any future operable unit(s); any new environmental condition which is identified in the Basinwide RI/FS

or of which the United States is unaware at this time; or any remedial actions that are necessary to implement the Record of Decision ("ROD"), as modified by the Explanation of Significant Differences ("ESD") and Subpart F of Section VII (Work To Be Performed), other than the Work. Covered Matters also does not include response costs incurred by the State of California, the California Hazardous Substance Account, and any of the State's agencies, representatives, contractors or subcontractors, unless these costs were reimbursed by EPA under a cooperative agreement.

C. "City" shall mean the City of Burbank, California, a charter city, and any of its divisions, departments and other subdivisions. "City" shall not include any joint powers authority of which the City of Burbank is a member.

D. "Day" shall mean a calendar day, unless expressly stated to be a working day; provided, however, that in computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or federal or State holiday, the period shall run until the close of business of the next working day.

E. "Environment" shall have the meaning set forth in CERCLA Section 101(8), 42 U.S.C. § 9601(8).

F. "EPA" shall mean the United States Environmental Protection Agency.

G. "Explanation of Significant Differences" ("ESD") shall mean the document signed by the EPA Region IX Regional Administrator on November 21, 1990, attached as Appendix B and incorporated herein by reference, which modifies the ROD.

H. "Fund" or "Superfund" shall mean the Hazardous Substances Superfund, referenced in Section 111 of CERCLA, 42 U.S.C. § 9611.

I. "Future Response Costs" shall mean all costs including but not limited to all administrative, indirect, enforcement, investigative, remedial, removal, oversight and monitoring costs incurred by the United States in connection with the Site pursuant to CERCLA, subsequent to December 31, 1989 and prior to the termination of this Consent Decree, except that the term shall not include the costs of performing any RI/FS or the costs of implementing any future Record(s) of Decision, Explanation(s) of Significant Differences (other than an Explanation of Significant Differences setting forth the changes provided for in Subpart F of Section VII (Work To Be Performed) or Amendment(s) to Record(s) of Decision.

J. "Lockheed" shall mean the Lockheed Corporation, incorporated in the state of Delaware, and any of its subsidiaries, parents, affiliates, predecessors and successors.

K. "Oversight Costs" shall mean all costs incurred by the United States in overseeing the Work and assessing the adequacy of the City's and Lockheed's performance pursuant to this Decree, including but not limited to the costs of reviewing or developing plans or reports.

L. "Past Response Costs" shall mean all costs, including but not limited to all administrative, indirect, enforcement, investigative, remedial, removal, oversight and monitoring costs incurred by the United States in connection with the Site, prior to and including December 31, 1989.

M. "Point of Interconnection" shall mean the physical point of transfer of the treated groundwater after it goes through the booster station but before it enters the blending facilities. For purposes of this Consent Decree, such transfer shall take place at the upstream flange of a water meter located on a pipeline between the booster station and the blending facilities and used to measure the quantity of water to be transferred, as depicted in Appendix E.

N. "Point of Delivery" shall mean the physical point of transfer of the treated groundwater from Lockheed to the City. For the purposes of this Consent Decree, such transfer shall take place at the downstream flange of a meter that is located between the groudwater Treatment Plant and the Valley Forebay Facility and is used to measure the quantity of water to be transferred, as depicted in Appendix E.

O. "Point of MWD Connection" shall mean the physical point of transfer of the Metropolitan Water District ("MWD") blending water from the MWD pipeline to the blending facilities. For the purposes of this Decree, such transfer shall take place at the downstream flange of a meter that is located between the MWD pipeline and the blending facilities and is used to measure the quantity of water to be transferred, as depicted in Appendix E.

P. "Point of Water System Introduction" shall mean the physical point of transfer of the blended water from the blending facilities to the City's public water supply distribution system. For the purposes of this Consent Decree, such transfer shall take place at the downstream flange of a valve located on the pipeline between the blending facilities and the City's public water supply distribution system, as depicted in Appendix E.

Q. "Record of Decision" ("ROD") shall mean the document signed on June 30, 1989, by the EPA Region IX Deputy Regional Administrator, acting for the Regional Administrator, attached hereto as Appendix A and incorporated herein by reference.

R. "Release" shall have the meaning set forth in CERCLA Section 101(22), 42 U.S.C. § 9601(22).

S. "Remedial Action Work" shall mean those activities (including all operation and maintenance required by this Consent Decree) to be undertaken by Settling Work Defendants to implement the final plans and specifications submitted by Settling Work Defendants pursuant to the Remedial Design Work Plan approved by EPA pursuant to Section VII (Work To Be Performed). The Remedial Action Work does not constitute all of the remedial action selected in the ROD (as modified by the ESD and Subpart F of Section VII (Work To Be Performed)).

T. "Remedial Design Work" shall mean the phase of the Work required by this Consent Decree wherein, consistent with the ROD (as modified by the ESD and Subpart F of Section VII (Work To Be Performed)), this Decree and the National Contingency Plan, 40 C.F.R. Section 300 et. seq. ("NCP"), the engineering plans and

technical specifications are to be developed by Settling Work Defendants, for approval by EPA, and on which implementation of the Remedial Action Work shall be based.

U. "Settling Defendants" shall mean Lockheed, Weber and the City.

V. "Settling Parties" shall mean the United States of America, Lockheed, Weber and the City.

W. "Settling Work Defendants" shall mean Lockheed and the City.

X. "State" shall mean the State of California.

Y. "Statement of Work" shall mean the document containing EPA's best effort to provide a detailed description of the steps necessary to accomplish the Work, attached as Appendix D and incorporated herein by reference, as it may be modified in accordance with Section XXIV (Modification).

Z. "Site" (when capitalized) or "Burbank Operable Unit Site" shall mean the areal extent of TCE and/or PCE groundwater contamination that is presently located in the vicinity of the Burbank Well Field and including any areas to which such groundwater contamination migrates.

AA. "System Operation Date" for each phase described in Subpart E of Section VII (Work To Be Performed) shall mean the first day on which Lockheed begins extracting and treating groundwater with the facilities constructed as part of the Remedial Action Work for that phase.

BB. "United States" shall mean the United States of America.

CC. "Valley Forebay Facility" shall mean the structure owned by the City and designed to receive the treated water as a regulating reservoir for the booster station depicted in Appendix E. The reservoir has an overflow elevation of 655 feet.

DD. "Weber" shall mean Weber Aircraft, Inc., incorporated in the state of Delaware, and any of its subsidiaries, parents, affiliates, predecessors and successors.

EE. "Work" shall mean the performance of the Remedial Design Work and the Remedial Action Work in a manner which accomplishes all of the requirements of Section VII (Work To Be Performed) of this Consent Decree.

FF. "Working Day" shall mean a day other than a Saturday, Sunday, or federal or State holiday.

II. JURISDICTION

A. The Court has jurisdiction over the subject matter of and the parties to this Consent Decree pursuant to CERCLA, federal question jurisdiction, and the status of the United States as plaintiff. Sections 106, 107, and 113 of CERCLA, 42 U.S.C. §§ 9606, 9607, and 9613, and 28 U.S.C. §§ 1331, 1345.

B. Settling Defendants do not contest and agree not to contest the authority of the United States to maintain this action or the Court's jurisdiction to enter and enforce this Consent Decree.

III. DENIAL OF LIABILITY

Settling Defendants deny any and all legal or equitable liability under any federal, State, or local statute, regulation or ordinance, or the common law, for any response costs, damages

or claims caused by or arising out of conditions at or arising from the Burbank Well Field or the Site. By entering into this Consent Decree, or by taking any action in accordance with it, Settling Defendants do not admit any allegations contained herein or in the complaint, nor do Settling Defendants admit liability for any purpose or admit any issues of law or fact or any responsibility hazardous substance into the environment. Nothing in this Section shall alter Settling Defendants' agreement not to challenge the Court's jurisdiction as set forth in Section II (Jurisdiction).

IV. SITE BACKGROUND

The following is a summary of the Site background as alleged by the United States which, for the purposes of this Decree, Settling Defendants neither admit nor deny:

A. The North Hollywood Area Superfund site is one of four sites in the San Fernando Valley Groundwater Basin ("Basin") which were placed on the National Priorities List ("NPL") concurrently in June of 1986. Remediation of groundwater in the Basin is a collaborative undertaking of EPA, the Los Angeles Department of Water and Power ("DWP"), the California Department of Health Services ("DHS") and the California Regional Water Quality Control Board ("RWQCB").

B. The Burbank Operable Unit Site is a part of the North Hollywood Area Superfund site (also known as the San Fernando Valley Area #1 Superfund site). The Burbank Operable Unit Site presently includes the Northeast corner of the North Hollywood Area Superfund site, as well as the areas to which the plume of

TCE and PCE has spread beyond the original boundaries drawn at the time the North Hollywood Area Superfund site was listed on the NPL. Based on the nature of the groundwater contamination at the Site, EPA has decided to institute remedial actions at the Site, as detailed in the ROD, ESD and this Consent Decree as a separate "Operable Unit," prior to completion of the Basinwide Remedial Investigation/Feasibility Study (described below) and decisions on what further remedial actions may be necessary in the Basin and/or at the Site.

C. Concentrations of volatile organic compounds ("VOCs") exceeding State Action Levels ("SALs") and Federal Maximum Contaminant Levels ("MCLs") were first discovered in the Basin in 1980. Since that time, the RWQCB and DHS have supervised soil and groundwater sampling and analysis in the Burbank area. Presently, VOC family members trichloroethylene ("TCE") and perchloroethylene ("PCE") have been found in the Burbank Well Field at levels that exceed the MCLs for these hazardous substances. These materials are commonly used for machinery degreasing, dry cleaning, and metal plating. The Federal MCL for TCE in drinking water is set at 5 parts per billion ("ppb"). The State MCL for PCE in drinking water is also set at 5 ppb. To date, levels of TCE of up to 1,800 ppb and levels of PCE of up to 590 ppb have been measured at the City of Burbank's extraction wells. Higher levels of these hazardous substances have been measured at other wells within the Site. EPA, in conjunction with RWQCB, DWP and DHS, has conducted and continues to conduct source investigations at the Site.

D. In August of 1987, EPA entered into a cooperative agreement with DWP which allowed DWP to conduct a Basin-wide Remedial Investigation ("RI"). EPA has also entered into a multi-site cooperative agreement with DHS which funds DHS participation in remedial activities at many California Superfund sites, including those in the Basin, under authority of CERCLA Section 104, 42 U.S.C. § 9604. In December of 1989, DWP completed construction of the North Hollywood Aeration Facility to address contamination at the North Hollywood Operable Unit, the first Operable Unit in the Basin. Treated groundwater from the North Hollywood Aeration Facility is chlorinated and released to the public water supply, where it is used for drinking water purposes. In September of 1989, EPA entered into a cooperative agreement with the RWQCB which funds source investigation and source control work in the Basin.

E. The Burbank Operable Unit is the second Operable Unit in the Basin. In October of 1988, the Burbank Operable Unit Feasibility Study ("OUFS") was released. The OUFS set forth a range of remedial actions which EPA considered for the Burbank Operable Unit Site. The Record of Decision (ROD) signed on June 30, 1989 selected an interim remedy for the Site. This remedy was modified by the Explanation of Significant Differences ("ESD") issued by EPA on November 21, 1990. EPA has decided to include in this Decree some additional modifications to the interim remedy, as provided in Subpart F of Section VII (Work To Be Performed). These modifications do not represent a fundamental change to the remedy.

V. PURPOSE

A. The purpose of this Consent Decree is to resolve amicably a portion of the existing dispute between the Settling Parties as to whether remedial action is necessary and appropriate with respect to the Burbank Operable Unit Site and to settle the claims asserted against Settling Defendants in the complaint filed in this matter.

B. This Consent Decree is also intended to serve the public interest by protecting the public health, welfare, and the environment from releases or threatened releases of hazardous substances from facilities located in or near the Site by implementation of the Work set out in Section VII (Work To Be Performed) of this Consent Decree and to obtain reimbursement from Lockheed for certain of the United States' response costs as specified in this Consent Decree.

C. The Work and the tasks described in Subpart B of Section VII (Work To Be Performed) are intended to implement a portion of the ROD, as modified by the ESD and to meet the requirements of Subpart F of Section VII (Work To Be Performed). The Settling Parties recognize that the remedy selected in the ROD, ESD and this Decree may not constitute the final remedy for groundwater at the Site. The Settling Parties also recognize that performance of this Consent Decree will not fully implement the ROD and ESD for the Burbank Operable Unit.

VI. BINDING EFFECT

A.1. The undersigned representative of Lockheed certifies that Lockheed is fully authorized to enter into the terms and conditions of this Decree and that he or she is fully authorized to execute this document and legally bind Lockheed to the provisions of this Decree.

2. The undersigned representative of the City certifies that the City is fully authorized to enter into the terms and conditions of this Decree and that he or she is fully authorized to execute this document and legally bind the City to the provisions of this Decree.

3. The undersigned representative of Weber certifies that Weber is fully authorized to enter into the terms and conditions of this Decree and that he or she is fully authorized to execute this document and legally bind Weber to the provisions of this Decree.

4. The undersigned Assistant Attorney General for the Environment and Natural Resources Division of the Department of Justice certifies that the United States is fully authorized to enter into the terms and conditions of this Decree and that he or she is fully authorized to execute this document and legally bind the United States to the provisions of this Decree.

B. The person(s) identified by name and address in Section XXIII (Form of Notice) of this Consent Decree as the recipient for each Settling Defendant is authorized by that Settling Defendant to accept service of process by mail on its behalf with respect to all matters arising under this Consent Decree. For

purposes of entry and enforcement of this Consent Decree only, each Sett manner and to waive the formal service requirements set forth in Rule 4 of the Federal Rules of Civil Procedure, including service of a summons, and any applicable local rules of this Court.

C. This Consent Decree shall apply to and be binding upon Settling Defendants, their officers, officials, directors, successors, and assigns, and upon the United States and its representatives.

D. Each Settling Work Defendant agrees to provide a copy of this Consent Decree, as entered, along with all relevant additions and modifications to this Consent Decree, as appropriate, to each person, including all contractors and subcontractors, retained by that Settling Work Defendant to perform the Work required by this Decree within thirty (30) days of retainer and to condition any contract for the Work on compliance with this Consent Decree.

E.1. No change in ownership of Lockheed, property or assets owned by Lockheed or the corporate status of Lockheed, including but not limited to any transfer of real or personal property, shall alter EPA or Settling Defendants' rights and obligations under this Consent Decree, including access rights under this Decree. In the event that Lockheed transfers any real property it owns in the City of Burbank prior to termination of this Decree pursuant to Section XXXIV (Termination and Satisfaction), Lockheed shall provide a copy of this Decree to the transferee

prior to consummating the transaction and evidence such action by providing a copy of its transmittal letter to EPA within ten (10) working days of consummating the transaction.

2. No change in ownership of property or assets owned by the City or the legal status of the City, including but not limited to any transfer of real or personal property, shall alter EPA or Settling Defendants' rights and obligations under this Consent Decree, including access rights under this Decree. In the event that the City transfers any of the real property it owns at 164 West Magnolia Boulevard in the City of Burbank prior to termination of this Decree pursuant to Section XXXIV (Termination and Satisfaction), the City shall provide a copy of this Decree to the transferee prior to consummating the transaction and evidence such action by providing a copy of its transmittal letter to EPA within ten (10) working days of consummating the transaction. Notwithstanding this Subpart, nothing in this Decree shall be construed as or shall act as a prohibition on the City's ability to freely vacate, abandon or otherwise dispose of its streets, rights of way or any other interest it has in streets and rights of way, except insofar as:

a. Lockheed has previously notified the City that access to particular segment(s) of such City streets or rights of way is necessary to perform the Remedial Design Work or Remedial Action Work, and such access has not been determined to be unnecessary to perform the Remedial Design Work or Remedial Action Work pursuant to the dispute resolution provisions of Section XX (Dispute Resolution); or

b. EPA has previously notified the City that access to particular segment(s) of such City streets or rights of way is necessary to perform or have a potentially responsible party perform the tasks described in Subpart B of Section VII (Work To Be Performed) and such access has not been determined to be unnecessary to perform the tasks described in Subpart B of Section VII (Work To Be Performed) pursuant to the dispute resolution provisions of Section XX (Dispute Resolution).

3. No change in ownership of Weber, property or assets owned by Weber or the corporate status of Weber, including but not limited to any transfer of real or personal property, shall alter EPA or Settling Defendants' rights and obligations under this Consent Decree, including access rights under this Decree. In the event that Weber transfers any of the real property it owns at either 2820 Ontario Street or 3000 North San Fernando Road in the City of Burbank prior to termination of this Decree pursuant to Section XXXIV (Termination and Satisfaction), Weber shall provide a copy of this Decree to the transferee prior to consummating the transaction and evidence such action by providing a copy of its transmittal letter to EPA within ten (10) working days of consummating the transaction.

VII. WORK TO BE PERFORMED

A. The Work to be performed pursuant to this Consent Decree shall consist of the tasks described in Subparts A.1 through A.5, below.

1. The design and construction of all facilities necessary to:

a. extract 12,000 gallons per minute ("gpm") of groundwater from the Burbank Operable Unit Site;

b. treat the extracted groundwater to a level that does not exceed drinking water standards promulgated on or before January 31, 1991 and still in effect at the time of the extraction, except the MCL for nitrate;

c. deliver 9,000 gpm of the treated water to the Point of Delivery;

d. reinject into the San Fernando Valley Groundwater Basin the treated water which is not accepted by the City at the Point of Delivery or discharged in compliance with Subpart F of this Section, up to the capacity limits established pursuant to the Statement of Work;

e. discharge any treated groundwater allowed to be discharged pursuant to Subpart F of this Section;

f. perform monitoring necessary to design, construct, operate and maintain the facilities described in Subparts A.1.a through A.1.e of this Section; and

g. monitor the effectiveness of the foregoing facilities in achieving the extraction, treatment and reinjection standards established by Subparts F and G of this Section.

2. The operation and maintenance of the facilities described in Subpart A.1 for the time periods specified in Subpart E.

3. The design and construction of all facilities necessary to:

a. accept 9,000 gpm of treated groundwater at the Point of Delivery;

b. disinfect such treated groundwater;

c. transport the disinfected groundwater to the Valley Forebay Facility and from there to the Point of Interconnection;

d. perform monitoring necessary to design, construct, operate and maintain the facilities described in Subparts A.3.a through A.3.c; and

e. monitor the effectiveness of the foregoing facilities in achieving the disinfection standards established by Subpart G of this Section.

4. The operation and maintenance of the facilities described in Subpart A.3 for the time periods specified in Subpart E.

5. The operation and routine maintenance (as described in the Statement of Work) of the facilities constructed pursuant to Subpart B.1 of this Section for the periods specified in Subpart E.

B. The Work does not include, and Settling Defendants have not agreed to perform, the following tasks:

1. The design and construction of all facilities necessary to:

a. receive 9,000 gpm of disinfected groundwater at the Point of Interconnection;

b. blend such disinfected groundwater with MWD supplied water ("blending water") to achieve a combined water supply in the amount of 18,000 gpm ("blended water");

c. transport the disinfected groundwater from the Point of Interconnection to the blending facilities;

d. transport 9,000 gpm of blending water from its MWD source to the blending facilities;

e. transport 18,000 gpm of blended water from the blending facilities to the Point of Water System Introduction;

f. perform monitoring necessary to design, construct, operate and maintain the facilities described in Subparts B.1.a through B.1.e; and

g. monitor the effectiveness of the foregoing facilities in achieving the blending standards established by Subpart H.1 of this Section.

2. The performance of any non-routine maintenance with respect to the facilities described in Subpart B.1 for the time period during which the Work is being performed.

C.1. Appendix E to this Decree, which is hereby incorporated into this Decree by reference, consists of three schematics which set out in general the relationship between:

a. Some of the facilities to be designed, constructed, operated and maintained by each Settling Work Defendant pursuant to this Decree, and

b. Some of the facilities described in Subpart B of this Section.

2. In the case of any discrepancy between Appendix E and the Work as described in the rest of this Section or the tasks described in Subpart B of this Section, the wording of this Section shall prevail over Appendix E.

D.1. The City of Burbank shall be solely responsible for performing all of the Work required by Subparts A.3, A.4 and A.5 of this Section, subject to reimbursement by Lockheed (in an amount not to exceed $200,000) as provided in Section XII (Financial Assurance and Trust Accounts); and Lockheed shall be solely responsible for performing all other Work required by this Decree.

2. Lockheed and the City agree to coordinate performance of their respective portions of the Work with each other to accomplish the timely and satisfactory completion of all of the Work.

3. EPA presently intends to seek to have the tasks described in Subpart B of this Section performed through enforcement actions or judicial settlements with potentially responsible parties ("PRPs"). These PRPs may consist of or include the Settling Defendants, pursuant to the reservation of EPA's enforcement authority in Subparts C and/or D of Section XVII (Reservation and Waiver of Rights), except insofar as EPA has agreed pursuant to Subpart D.2 of that Section not to pursue Weber or the City. If (a) person(s) other than the Settling Defendants perform(s) any of the tasks described in Subpart B, Lockheed and the City agree to coordinate performance of their respective portions of the Work with any tasks being performed by any other person(s) to accomplish the timely and satisfactory completion of the Work and the tasks described in Subpart B of this Section. Nothing in this Section shall preclude the United States from instituting proceedings in this action or in a new

action or issuing an order, pursuant to the reservations in Subparts C and/or D of Section XVII (Reservation and Waiver of Rights), seeking to compel Lockheed to perform the tasks described in Subpart B of this Section.

E. The Work shall be implemented, subject to EPA oversight and approval, pursuant to the schedule contained in and in accordance with the requirements of this Decree, the Statement of Work attached hereto as Appendix D and any schedule approved pursuant to these documents, which provides for the Work and the tasks described in Subpart B of this Section to be performed in the following phases:

1. During phase one, all facilities necessary to extract, treat and deliver 6,000 gpm of treated and disinfected groundwater to the blending facilities, 9,000 gpm of blending water to the blending facilities, and 18,000 gpm of blended water to the Point of Water System Introduction, to accept and blend the treated water and to monitor performance of the foregoing facilities shall be designed and constructed. These facilities shall be operated and maintained from the System Operation Date for phase one until the System Operation Date for phase two, except insofar as the Statement of Work permits otherwise.

2. During phase two, all facilities necessary to extract, treat and deliver an additional 3,000 gpm of treated and disinfected groundwater to the blending facilities, to reinject treated groundwater which is not accepted by the City (such reinjection capacity to consist of 5,500 gpm, unless EPA decides that more reinjection capacity is needed, pursuant to the provisions

in the Statement of Work) and to monitor performance of the new facilities, shall be designed and constructed. These facilities, and the facilities from phase one, shall be operated and maintained from the System Operation Date for phase two until the System Operation Date for phase three, except insofar as the Statement of Work permits otherwise.

3. During phase three, all facilities necessary to extract, treat and reinject an additional 3,000 gpm of treated groundwater and to monitor performance of the new facilities, shall be designed and constructed. If EPA has determined, pursuant to the provisions of the Statement of Work, that more than an additional 3,000 gpm of reinjection facilities are needed, such facilities shall also be constructed during phase three. All phase three facilities, and the facilities from phases one and two, shall be operated and maintained for a period of two years from the System Operation Date for phase three, except insofar as the Statement of Work permits otherwise; provided, however, that (1) if there is a suspension of the operation of the extraction and treatment system (including but not limited to any allowed by the Statement of Work), the time period of such suspension shall not be included in computing the two-year period during which all of the phase one, two and three facilities must be operated and (2) if the extraction, treatment and/or reinjection facilities are operating but are not meeting the standards required by Subpart G for such activities, the period of operation during which such

standards are not met shall not be included in computing the two-year period during which all of the phase one, two and three facilities must be operated.

F. This Subpart contains nonsignificant modifications to the remedy selected in the ROD and ESD. Settling Work Defendants agree to comply with the requirements of this Subpart in implementing the remedy, and also agree that these requirements constitute part of the Work.

1. Lockheed may discharge extracted water to any offsite conveyance(s) leading to a Publicly Owned Treatment Works ("POTW") or to any offsite conveyance(s) leading to any water(s) of the United States for a period of up to thirty (30) (not necessarily consecutive) days between the System Operation Date for any phase and sixty days after that System Operation Date, provided that the following requirements are met:

a. All substantive and procedural requirements applicable to such discharge at the time of such discharge shall be met, including any limits on the quantity of water to be discharged;

b. The total combined amount of any discharge(s) of extracted water to any offsite conveyance(s) leading to any POTW(s) at any time shall not exceed 6,000 gpm; and

c. The total combined amount of extracted water discharged to any offsite conveyance(s) leading to any POTW(s) and to any offsite conveyance(s) leading to any water(s) of the United States at any time shall not exceed 12,000 gpm.

2. Lockheed may discharge extracted water to any offsite conveyance(s) leading to any Publicly Owned Treatment Works ("POTW") or to any offsite conveyance(s) leading to any water(s) of the United States for a period of up to five (not necessarily consecutive) days during any month other than the sixty days following each phase's System Operation Date, if the water is not accepted by the City and cannot be reinjected, provided that the requirements of Subparts F.1.a through F.1.c of this Section are met for such discharge. Nothing in this Subpart shall excuse Lockheed from stipulated penalties for failure to comply with any other requirements of this Decree, including but not limited to the requirement to construct reinjection capacity as required by this Decree.

3. Lockheed may discharge development and purge water from wells to any offsite conveyance(s) leading to a Publicly Owned Treatment Works ("POTW") or to any offsite conveyance(s) leading to any water(s) of the United States, provided that any such discharge is in compliance with all substantive and procedural requirements applicable to such discharge at the time of such discharge. Water discharged pursuant to this Subpart F.3 shall not be included in the limits on the amount of water allowed to be discharged pursuant to Subparts F.1.b, F.1.c and F.2 of this Section.

4. Any water containing hazardous constituents and stored onsite for more than ninety days shall be handled as a hazardous waste onsite. Such storage shall be accomplished in compliance with the substantive requirements of 40 C.F.R. Part 264, Subparts

I and J, and 22 California Code of Regulations, Chapter 30, Article 24 ("Use and Management of Containers") and Article 25 ("Tank Systems"). These requirements are applicable or relevant and appropriate requirements for the Remedial Action Work.

5. With respect to requirements for the operation of the groundwater Treatment Plant's VOC-stripper (i.e., air stripper with vapor phase granulated activated carbon absorption units and/or steam stripper), South Coast Air Quality Management District ("SCAQMD") Rule 1167 was rescinded in December of 1988 and Settling Work Defendants are not required to comply with this Rule despite any other language in this Decree. Furthermore, some of the regulations cited in the ROD have been changed by the SCAQMD. The only requirements of the SCQAMD that Lockheed is required to comply with in performing Work onsite are the substantive requirements of the following applicable or relevant and appropriate requirements for the groundwater Treatment Plant (i.e., air stripper with vapor phase granulated activated carbon ("GAC") absorption units and/or steam stripper):

a. SCAQMD Regulation XIII, as amended through June 28, 1990; and

b. SCAQMD Rule 1401, as adopted on June 1, 1990.

G. The Work to be performed shall, at a minimum, achieve the following standards during system operation:

1. All groundwater to be extracted shall be treated by Lockheed to a level that does not exceed drinking water standards (other than the MCL for nitrate), including secondary drinking

water standards, in effect at the time of the extraction, provided that such standards were promulgated by EPA or the State on or before January 31, 1991. These drinking water standards include, but are not limited to, the following chemicals and MCLs:

Chemical	MCL
PCE	5.0 micrograms/liter
TCE	5.0 micrograms/liter

2. All extracted groundwater reinjected by Lockheed shall meet the following requirements:

a. Compliance with RCRA Section 3020;

b. All drinking water standards (other than the MCL for nitrate) in effect at the time of such reinjection, provided such standards were promulgated by EPA or the State on or before January 31, 1991; and

c. Nitrate levels that comply with the Los Angeles River Basin Plan, including the State Water Resources Control Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California." See Los Angeles River Basin Plan 4B, Chapter 4, Pages I-4-2 to I-4-3.

3. All treated groundwater that is accepted at the Point of Delivery shall be disinfected and then blended by the City to meet all legal requirements for introduction of the blended water into the City's water supply system, including, but not limited to, the MCL for nitrate.

4. In order to prevent any reduction in the overflow elevation (high water level) of the Valley Forebay Facility, Lockheed shall provide treated groundwater at pressure sufficient to enable its physical movement from the Point of Delivery to the Valley Forebay Facility.

5. In extracting groundwater in the amounts required by this Decree, Lockheed shall extract from the most VOC-contaminated zones of the aquifer.

6. Lockheed shall design, construct, operate and maintain the facilities it is required to design, construct, operate and maintain in such a way as to ensure that delivery of water to the Point of Delivery that does not meet the drinking water standards promulgated and in effect on the date of delivery (other than the MCL for nitrate), regardless of when any such standards were promulgated, shall result in the immediate, and, in all cases where possible, automatic shut-down of the groundwater Treatment Plant and water delivery system. Such a shut-down shall not, in and of itself, release Lockheed from any other requirement of this Decree and specifically shall not, in and of itself, affect the requirement that Lockheed pay stipulated penalties for failure to deliver water to the Point of Delivery in the amounts and of the quality required by this Decree.

H.1. The City shall accept all treated groundwater provided by Lockheed at the Point of Delivery which satisfies the treatment standards established by Subpart G of this Section up to an amount which, when blended with the blending water, will meet the City's Monthly Average Minimum Day Water Demand (as defined in

the Statement of Work) without resulting in a nitrate concentration in the blended water that exceeds the promulgated MCL for nitrate in effect at that time; provided however that, in order to maximize the City's use of treated groundwater while providing a margin of safety in achieving compliance with the MCL for nitrate, the City shall be deemed to be in compliance with this Subpart if it:

a. Maximizes the use of blended water to meet the City's Monthly Average Minimum Day Water Demand and the level of nitrate in the blended water is between sixty-seven percent (67%) and eighty-nine percent (89%) of the promulgated MCL for nitrate that is in effect at the time of the blending at all times when the nitrate level in the treated groundwater supplied by Lockheed exceeds sixty-seven percent (67%) of the MCL for nitrate promulgated and in effect at the time the water is delivered to the City, and

b. Maximizes the use of unblended treated groundwater supplied by Lockheed to meet the City's Average Minimum Day Water Demand at all times when the nitrate level in the treated groundwater is below sixty-seven percent (67%) of the promulgated MCL for nitrate in effect at the time the water is delivered to the City.

2. Notwithstanding the requirements of Subpart H.1 of this Section, the City shall not be charged a stipulated penalty for failure to meet a nitrate level specified in that Subpart unless

the nitrate concentrations of the blended water exceed the promulgated MCL for nitrate in effect at the time of the blending.

3. The acceptance of water by the City shall consist of ensuring the physical movement of treated water which is delivered to the Point of Delivery to the first measurable point beyond the Point of Delivery.

4. Lockheed shall extract, treat and deliver groundwater to the City at the Point of Delivery that satisfies the treatment standards established by Subpart G of this Section in an amount which satisfies the requirements of Subpart E of this Section, as limited by the amount of water the City is required to accept pursuant to Subpart H.1 of this Section. Lockheed shall extract, treat and reinject or discharge, in compliance with Subparts F and G of this Section, additional groundwater such that the total amount of water extracted, treated and then delivered to the City, reinjected or discharged equals or exceeds the level of groundwater extraction and treatment Lockheed is required, pursuant to Subpart E, to accomplish during the applicable phase.

I.1. If Lockheed is not delivering treated groundwater to the Point of Delivery which meets the promulgated drinking water standards, including primary and secondary drinking water standards, in effect at the time the water is delivered (other than the MCL for nitrate), the City shall not be obligated to meet the operation requirements of Subpart A.4 and A.5 of this Section.

2. Lockheed shall not be obligated to meet the requirements of Subpart H.4 of this Section if:

a. The City is not accepting treated groundwater at the Point of Delivery which it is required to take from Lockheed by Subpart H.1 of this Section; or

b. A new drinking water standard is promulgated after January 31, 1991, EPA has identified such standard as applicable or relevant and appropriate for the treated groundwater and necessary to protect public health or the environment and such standard cannot be met without modifying the facilities to be constructed pursuant to Subpart A of this Section or changing their operation;

J. Commencing on the System Operation Date for phase one of the Work, Lockheed shall, at a minimum, sample and analyze the treated groundwater from the groundwater Treatment Plant no less often than weekly using EPA Method 502.2 or an alternative method approved by EPA in writing. Lockheed shall also perform all sampling and analysis it is required to perform pursuant to the Statement of Work. For purposes of this Consent Decree, a given sample of treated groundwater shall be considered representative of treated groundwater from the groundwater Treatment Plant from the time the given sample was taken until the time at which the next sample is taken; provided, however, that a given sample of treated groundwater shall only be considered representative for times during which the groundwater Treatment Plant is operating.

K. The Work shall be performed in accordance with the Decree, including the terms, standards and specifications set forth in this Section, in the Statement of Work and in any deliverables approved by EPA pursuant to such documents.

L. None of the Settling Parties has agreed, pursuant to this Decree, to decommission or dismantle the blending facility or groundwater Treatment Plant to be constructed as part of the Work, and this Decree shall not be construed as an agreement by any Settling Party to perform such actions.

M.1. The onsite Remedial Action Work, as designed, shall meet the substantive standards of all "applicable requirements" and "relevant and appropriate requirements," as those terms are defined in CERCLA Section 121(d), 42 U.S.C. § 9621 (d) and 40 C.F.R. § 300.6, that are identified in the ROD as modified by the ESD and Subpart F of this Section.

2. If any new requirement(s) are promulgated or any requirement(s) promulgated on or before January 31, 1991 are changed at any time after this Consent Decree is signed, EPA shall determine (pursuant to 40 C.F.R. § 300.430(f)(1)(ii)(b)(1)) whether or not the requirements(s) are (a) applicable or relevant and appropriate, and (b) necessary to ensure that the remedy is protective of human health and the environment. For any requirement(s) that EPA determines meet both criteria, EPA will seek to negotiate with Settling Defendants to amend the Consent Decree (including the Statement of Work) to ensure that the Work will comply with the new or changed requirement(s). However, in signing this Consent Decree, Settling Defendants have not agreed to meet any such new or changed requirement(s). EPA reserves the right to stop performance of the Work if Settling Defendants do not agree to meet such new or changed requirement(s). If EPA stops the Work pursuant to this Section, Lockheed and the City

shall not be deemed to have violated the Consent Decree for failure to perform the Work. Lockheed and the City shall also not be entitled to a Covenant Not To Sue for any Work performed prior to the date that EPA stopped performance of the Work pursuant to this Section. Nothing in this Section shall preclude the United States from instituting proceedings in this action or a new action or issuing an order pursuant to Subpart D of Section XVIII (Covenant Not To Sue), seeking to compel the Settling Defendants to meet the new or changed requirement(s).

N. The City may, at its sole option, monitor the treated groundwater received at the Point of Delivery. In performing any such monitoring, the City shall comply with the requirements of Section VIII (Quality Assurance).

O. If EPA decides to operate and maintain the extraction, treatment and reinjection facilities constructed pursuant to Subpart A of this Section after the Work required by this Decree is completed, or to have a person(s) other than Lockheed or EPA do so, Lockheed shall cooperate with EPA and/or the other person(s) with respect to the continuing operation of such facilities. Such cooperation shall include, but not be limited to: (1) training personnel in plant operation and maintenance; (2) providing necessary technical information; (3) reviewing and commenting on operating plans and procedures; (4) providing access to the plant and any related facilities (including reinjection facilities); and (5) maintaining and providing copies of the groundwater Treatment Plant design specifications, daily log, repair log, operation manuals, and any other records or documents

prepared by Lockheed related to the facilities. Lockheed's obligations pursuant to this Subpart shall not include an obligation to pay any Future Response Costs incurred by the United States during the period of cooperation.

P. All Remedial Design Work to be performed by Settling Work Defendants pursuant to this Consent Decree shall be under the direction and supervision of (a) qualified professional architect(s)/engineer(s). Settling Work Defendants may use one qualified professional architect/engineer, or each may select its own architect/engineer, to direct and supervise that portion of the Remedial Design Work to be performed by it. At least ten (10) days prior to the initiation of the Remedial Design Work, Settling Work Defendants shall notify EPA in writing of the name, title, and qualifications of the architect(s)/engineer(s) proposed to supervise and direct the Remedial Design Work to be performed by it pursuant to this Consent Decree. Selection of any such architect(s)/engineer(s) shall be subject to disapproval by EPA. If at any time after making their selection(s), (a) Settling Work Defendant(s)s propose(s) to change (a) professional architect(s)/engineer(s) directing and supervising Remedial Design Work, the Settling Work Defendant(s) shall give written notice to EPA. Any such change shall be subject to disapproval by EPA. If EPA disapproves of an architect/engineer proposed by (a) Settling Work Defendant(s) pursuant to this Subpart, EPA shall state in writing the reasons for such disapproval.

Q. All Remedial Action Work to be performed by Settling Work Defendants pursuant to this Consent Decree shall be under the direction and supervision of (a) qualified professional engineer(s). Settling Work Defendants may use one qualified professional engineer, or each may select its own engineer, to direct and supervise that portion of the Remedial Action Work to be performed by it pursuant to this Consent Decree. At least thirty (30) days prior to the initiation of Remedial Action Work at the Site, (a) Settling Work Defendant(s) shall notify EPA in writing of the name, title, and qualifications of the proposed engineer(s), and the names of the principal contractors and/or subcontractors (including laboratories) proposed to be used in carrying out the Remedial Action Work to be performed pursuant to this Consent Decree. Selection of any such engineer, contractor, or subcontractor shall be subject to disapproval by EPA. If at any time thereafter (a) Settling Work Defendant(s) propose(s) to change professional engineers directing and supervising Remedial Action Work, the Settling Work Defendant(s) shall give written notice to EPA. Any such change shall be subject to disapproval by EPA. If EPA disapproves of an engineer proposed by (a) Settling Work Defendant(s) pursuant to this Subpart, EPA shall state in writing the reasons for such disapproval.

R. The Statement of Work shall not be amended without the mutual written agreement of the Settling Work Defendant(s) affected by the modification and EPA, as provided for in Section

XXIV (Modification). This limitation on amending the Statement of Work shall not act to limit EPA's rights pursuant to Subpart B of Section XVII (Reservation and Waiver of Rights).

S. Documents to be submitted:

1. Deliverables: Each Settling Work Defendant shall prepare and submit those deliverables which that Settling Work Defendant is required to submit by the Statement of Work, as that document may be from time to time amended in accordance with Section XXIV (Modification).

2. Monthly Progress Reports: Each Settling Work Defendant shall provide written progress reports to EPA on a monthly basis. These progress reports shall describe the actions taken by that Settling Work Defendant to comply with this Consent Decree, including a general description of activities commenced or completed during the reporting period, Remedial Action Work activities projected to be commenced or completed during the next reporting period, any significant problems that have been encountered or are anticipated by that Settling Work Defendant in performing the Work activities and that Settling Work Defendant's recommended solutions, and the results of any sampling, tests, or other data required by the Decree (including the Statement of Work). Analytical sampling results shall be reported within the time periods specified in Section XI (Submission of Documents, Sampling and Analytic Data). Each Settling Work Defendant shall include any data required by the Decree (including the Statement of Work) other than analytical sampling results in the Monthly Progress Report for the month immediately following the month in

which that Settling Work Defendant or its representatives generated or acquired such data. These progress reports shall also include any specific information which the Statement of Work requires be included in them. These progress reports shall be submitted to EPA by the 10th day of each month for Work done the preceding month and planned for the current month.

3. Quarterly Quality Assurance Reports: The Settling Work Defendants shall each include a quality assurance report to EPA as part of its monthly reports for the months of January, April, July and October of each year. Such reports shall contain information that demonstrates that Settling Work Defendant's compliance with Section VIII (Quality Assurance), including but not limited to any specific information which the Statement of Work required be included in them.

T. Settling Work Defendants shall submit a draft and a final of each of the deliverables they are required to submit (except the monthly progress reports and the quarterly quality assurance reports). Any failure by Settling Work Defendants to submit a draft or final deliverable in compliance with the schedule set forth in the Statement of Work shall be deemed a violation of this Decree.

U. EPA shall review any deliverable Settling Work Defendants are required to submit for approval and shall: (1) approve, in whole or in part, the deliverable; (2) disapprove, in whole or in part, the deliverable, notifying the submitting Settling Work Defendant of the deficiencies; (3) direct the Settling Work Defendant that submitted the deliverable to modify the

deliverable; (4) approve the deliverable with specified conditions; (5) modify the deliverable to cure the deficiencies; or (6) any combination of the above; provided, however, that EPA may not use this review and approval process to expand the Work beyond that which each Settling Work Defendant has agreed to perform pursuant to this Decree.

V. In the event of approval, approval upon conditions, or modification by EPA, Settling Work Defendants shall proceed to take any action required by the deliverable, as approved or modified by EPA, subject only to Settling Work Defendants' right to invoke dispute resolution pursuant to Section XX (Dispute Resolution).

W. Upon receipt of a notice of disapproval or a notice requiring a modification, the Settling Work Defendant that submitted the deliverable shall, within ten (10) working days or such other longer period of time as specified by EPA in such notice, correct the deficiencies and resubmit the deliverable for approval. Notwithstanding the notice of disapproval, the Settling Work Defendant shall proceed, at the direction of EPA, to take any action required by the non-deficient portion of the deliverable. Implementation of non-deficient portions of a deliverable shall not relieve a Settling Work Defendant of its liability pursuant to Section XIX (Stipulated Penalties) for stipulated penalties for submitting a deficient deliverable.

X. If, upon resubmission, a deliverable or portion thereof is still deficient, the Settling Work Defendant that submitted the deliverable shall be deemed to be in violation of this Con-

sent Decree. If a resubmitted deliverable is disapproved by EPA, EPA may again take any of the actions described in Subpart U of this Section.

Y. Settling Work Defendants acknowledge and agree that neither this Consent Decree nor any approvals or permits issued by EPA or any other government entity shall be deemed a warranty or representation, either express or implied, by the United States that the activities thereby approved will result in achievement of the performance standards which this Decree requires Settling Work Defendants to meet. EPA has exercised its best efforts to include in the Statement of Work all activities necessary to fulfill the requirements of the Remedial Design Work and the Remedial Action Work. However, the Settling Parties acknowledge and agree that nothing in this Consent Decree (including the Statement of Work) or any deliverables submitted pursuant thereto constitutes a warranty or representation, either express or implied, by the United States that compliance with the Statement of Work and/or any deliverables approved by EPA will result in achievement of the performance standards that this Decree requires the Settling Work Defendants to meet, and that such compliance shall not foreclose the United States from seeking compliance with all terms and conditions of this Decree including, but not limited to, the performance standards of this Section.

Z. EPA Performance of the Work: In the event that EPA determines that a Settling Work Defendant fails to perform, in an adequate or timely manner, the Work it is required to perform

pursuant to this Decree, EPA may elect to perform a portion or all of the Work which that Settling Work Defendant is required to perform pursuant to this Decree, as EPA determines necessary. Except as is necessary to address an imminent and substantial endangerment to human health or the environment, EPA shall provide Settling Work Defendants with ten (10) days written notice of its intent to perform a portion or all of the Work. In the notice, EPA shall also describe the alleged deficiency.

AA. If the Settling Work Defendant required to perform the Work which EPA is taking over disagrees with EPA's determination that that Settling Work Defendant has failed to perform, in an adequate and timely manner, the Work it is required to perform by this Decree and that Settling Work Defendant desires to dispute EPA's determination in this regard, that Settling Work Defendant shall invoke the dispute resolution provisions of Section XX (Dispute Resolution) within thirty (30) days of receiving written notice of EPA's intent. Invocation of dispute resolution shall not divest EPA of its right to perform the Work during the dispute. Upon receipt of notification that EPA intends to take over the performance of a portion or all of the Work, that Settling Work Defendant's obligation to perform such Work pursuant to this Decree shall terminate. If EPA elects to perform the Work which a Settling Work Defendant is required to perform pursuant to this Decree, that Settling Work Defendant shall pay a Work Assumption Penalty as provided in Subpart I of Section XIX (Stipulated Penalties) and all other obligations of that Settling Work Defendant to pay stipulated penalties for any portion of the Work

taken over by EPA shall be terminated upon receipt of EPA's notice, except that payment of the Work Assumption penalty shall be in addition to any stipulated penalties which accrued prior to that Settling Work Defendant's receipt of EPA's notice of intent to take over all or a portion of the Work. A takeover of Work by EPA shall not affect Lockheed's obligation to pay Future Response Costs pursuant to Section XVI (Reimbursement of Future Response Costs).

VIII. QUALITY ASSURANCE

A. Each Settling Work Defendant shall submit to EPA for approval, in accordance with the schedule contained in the Statement of Work, comprehensive Quality Assurance ("QA") Project Plan(s) for all Work to be performed by that Settling Work Defendant pursuant to this Decree. The QA Project Plan(s) shall, where applicable, be prepared in accordance with U.S. EPA Interim Guidelines & Specifications for Preparing QA Project Plans - QAMS 055/80 (U.S. EPA December 1980) and U.S. EPA Region IX Guidance for Preparing QA Project Plans for Superfund Remedial Projects, Doc. 90A-03-89 (September, 1989), and any superseding or amended version of these documents provided by EPA to the Settling Work Defendants. Upon receipt of EPA's approval of each Final QA Project Plan, the Settling Work Defendant that submitted the plan shall immediately implement the QA Project Plan.

B. Settling Work Defendants shall use QA procedures and protocols in accordance with the QA Project Plan(s) approved pursuant to Subpart A of this Section, and shall utilize standard EPA sample chain of custody procedures, as documented in the Na-

tional Enforcement Investigations Center Policies and Procedures Manual as revised in May 1986 and any amended or superseding version of this document provided by EPA to the Settling Work Defendants, and the National Enforcement Investigations Center Manual, for the Evidence Audit, published in September 1981 and any amended or superseding version of this document provided by EPA to the Settling Work Defendants, for all sample collection and analysis activities conducted pursuant to this Decree.

C. In order to provide quality assurance and maintain quality control regarding all samples collected pursuant to this Decree, each Settling Work Defendant shall:

1. Ensure that all contracts with laboratories utilized by that Settling Work Defendant for analysis of samples taken pursuant to this Consent Decree provide for access of EPA personnel and EPA-authorized representatives to assure the accuracy of laboratory results obtained pursuant to this Decree.

2. Ensure that all laboratories utilized by that Settling Work Defendant for analysis of samples taken pursuant to this Consent Decree perform all analyses according to the approved QA Project Plan(s).

3. Ensure that all laboratories utilized by that Settling Work Defendant for analysis of samples taken pursuant to this Decree participate in an EPA or EPA-equivalent Laboratory Water Supply Performance Evaluation Study. As part of the QA program and upon request by EPA, such laboratories shall perform, at that Settling Work Defendant's expense, analyses of samples provided

by EPA to demonstrate the quality of each laboratory's data. EPA may provide to each laboratory a maximum of ten (10) samples per year per analytical combination.

4. Ensure that all laboratories utilized by that Settling Work Defendant for analysis of samples taken pursuant to this Decree follow EPA procedures in order for data validation to be accomplished as outlined in U.S. EPA Region IX, Laboratory Documentation Requirements for Data Validation (January, 1990), the Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analysis, Draft (July, 1988), the Laboratory Data Validation Functional Guidelines for Evaluating Organic Analysis, Draft (February, 1988) and any amended or superseding version of these documents provided by EPA to that Settling Work Defendant.

5. Agree not to contest EPA's authority to conduct field audits to verify compliance by that Settling Work Defendant with the requirements of this Section.

D. Each Settling Work Defendant shall require by contract and use its best reasonable efforts to ensure that samples taken on that Settling Work Defendant's behalf for purposes of implementing this Decree are retained and disposed of by analytical laboratories in accordance with EPA's customary contract procedures for sample retention, as outlined in the Contract Laboratory Project Statement of Work for Organics (October, 1986), Contract Laboratory Project Statement of Work for Inorganics (July 1987) and any amendments to or superseding versions of these documents provided by EPA to that Settling Work Defendant. If a laboratory fails to retain and dispose of samples as

required by its contract with a Settling Work Defendant, EPA and that Settling Work Defendant shall confer to determine whether the laboratory should continue to perform analytical work required by this Consent Decree. At EPA's written request stating the reasons therefor, the Settling Work Defendant shall discontinue use of the laboratory.

E. Notwithstanding the other Subparts of this Section, the City may substitute other quality assurance procedures for some or all of the procedures required by this Section if EPA issues a written determination to both Settling Work Defendants that such other procedures and the supporting documentation generated by the City are sufficiently similar to the requirements of this Section and any related reporting requirements for which such procedures and reporting requirements would be substituted that EPA is satisfied with such procedures as a substitute for some or all of the requirements of this Section and related reporting requirements. If at any time after issuing such a determination EPA decides that the City should again comply with all of the procedures of this Section, the City shall do so within thirty (30) days of receipt of EPA's written determination to this effect, containing the reasons for EPA's decision.

IX. PROJECT COORDINATORS

A. Within fifteen days of the effective date of this Decree, EPA, Lockheed and the City shall each designate a Project Coordinator to monitor the progress of the Work and to coordinate communication among the Settling Parties.

B. EPA's Project Coordinator will be an EPA employee and shall have the authority vested in the On-Scene Coordinator by 40 C.F.R. § 300 et seq., including such authority as may be added by amendments to 40 C.F.R. Part 300. EPA's Project Coordinator shall have the authority, inter alia, to require cessation of the performance of the Remedial Action Work or any other activity at the Site that, in the opinion of EPA's Project Coordinator, may present or contribute to an endangerment to public health, welfare, or the environment or cause or threaten to cause the release of hazardous substances from the Site. In the event that the EPA Project Coordinator suspends the Remedial Action Work of a Settling Work Defendant or any other activity at the Site, the EPA shall extend the schedule for that Settling Work Defendant's Remedial Action Work for the amount of time necessary to allow completion of any of that Settling Work Defendant's Remedial Action Work affected by such delay, provided that the original reason for the suspension was not due primarily to the acts or omissions of that Settling Work Defendant or its representatives. If EPA suspends the Remedial Action Work of one Settling Work Defendant and such suspension affects the Remedial Action Work of the second Settling Work Defendant, EPA shall extend the schedule for the second Settling Work Defendant's Remedial Action Work for the amount of time necessary to allow completion of any of that Settling Work Defendant's Remedial Action Work affected by such delay, provided that the original reason for the suspension was not due primarily to the acts or omissions of the second Settling Work Defendant or its representatives.

C. If a Settling Work Defendant disagrees with EPA's determination regarding the appropriateness of or the amount of time necessary for any extension authorized pursuant to Subpart B of this Section, that Settling Work Defendant may invoke the dispute resolution procedures of Section XX (Dispute Resolution).

D. The absence of EPA's Project Coordinator from the Site shall not be cause for stoppage of the Work.

E. A Settling Work Defendant or EPA may change its Project Coordinator by notifying the other Settling Parties in writing at least seven days prior to the change.

F. Each Settling Work Defendant's Project Coordinator may assign another representative, including a contractor, to serve as a Site representative for oversight of that Settling Work Defendant's daily operations during performance of the Work.

G. EPA's Project Coordinator may assign another representative, including another EPA employee or contractor, to serve as a Site representative for oversight of daily operations during performance of the Work. Such representative shall not have the powers of the Project Coordinator to require a cessation of the performance of the Remedial Action Work or any other activity at the Site unless such representative is also an EPA employee with the authority vested in the On-Scene Coordinator by 40 C.F.R. § 300 et seq. and amendments thereto.

X. SITE ACCESS

A. To the extent that Lockheed requires access to or easements over property (other than property it owns or controls or to which it is provided access pursuant to this Decree) for the

proper and complete performance of the Work, Lockheed shall use its best reasonable efforts to obtain access agreements from the owners or those persons who have control of such property. For purposes of this paragraph, "best reasonable efforts" shall include the payment of reasonable sums of money in consideration of access. Lockheed shall obtain the required access agreements by the following time periods:

1. For access needed by Lockheed prior to the start of remedial construction, access agreements shall be obtained by a date fifty (50) days prior to the date access is needed.

2. For access needed by Lockheed for remedial construction, access agreements shall be obtained at least fifty (50) days prior to the start of remedial construction.

3. If EPA identifies to Lockheed in writing additional access (beyond that access previously secured) which is required for the proper and complete performance by Lockheed of its requirements under this Decree, access agreements shall be obtained within fifty (50) days of EPA providing such identification in writing.

B. To the extent that the City requires access to or easements over property (other than property it owns or controls or to which it is provided access pursuant to this Decree) for the proper and complete performance of the Work, the City shall use its best reasonable efforts to obtain access agreements from the owners or those persons who have control of such property. For purposes of this paragraph, "best reasonable efforts" shall in-

clude the payment of reasonable sums of money in consideration of access. The City shall obtain the required access agreements by the following time periods:

1. For access needed by the City prior to the start of remedial construction, access agreements shall be obtained by a date fifty (50) days prior to the date access is needed.

2. For access needed by the City for remedial construction, access agreements shall be obtained at least fifty (50) days prior to the start of remedial construction.

3. If EPA identifies to the City in writing additional access (beyond that access previously secured) which is required for the proper and complete performance by the City of its requirements under this Decree, access agreements shall be obtained within fifty (50) days of EPA providing such identification in writing. In the event the City acquires property pursuant to this Subpart, which acquisition is necessary for the purpose of conducting remedial action, the City shall be entitled to the protection granted by Section 104(j)(3) of CERCLA, 42 U.S.C. § 9604(j)(3).

C. In the event that a Settling Work Defendant is unable to obtain an access agreement within the time periods specified in Subpart A or B of this Section, the Settling Work Defendant required to obtain such an agreement shall notify EPA regarding the lack of such agreements within five (5) days after the end of the period specified for the attainment of such access agreements in Subpart A or B of this Section and shall include in that notification a summary of the steps which that Settling Work

Defendant has taken to attempt to obtain access. Inability to obtain a required access agreement, if the Settling Work Defendant used its best reasonable efforts to obtain such agreement and has otherwise complied with the requirements of this Section, shall constitute a force majeure event and shall be subject to the provisions of Section XXI (Force Majeure). If the United States must obtain access on behalf of Settling Work Defendants, any costs incurred in obtaining such access (including but not limited to attorneys' fees and other legal costs) shall be treated as Future Response Costs to be reimbursed by Lockheed as provided in Section XVI (Reimbursement of Future Response Costs).

D. All Site access agreements to be obtained pursuant to this Section shall provide reasonable access to the Settling Work Defendant obtaining access, the United States and any of its agencies, the State of California, and the representatives of each of the foregoing, including contractors.

E. During the effective period of this Decree, the United States, the State, and their representatives, including contractors, shall have access, free of charge, to any property at the Site and any property contiguous to the Site owned or controlled by any Settling Defendant for any activity authorized by this Consent Decree, including but not limited to:

1. Monitoring the progress of the Work activities;

2. Verifying any data or information submitted by either Settling Work Defendant to EPA or the State;

3. Conducting investigations relating to contamination at or near the Site;

4. Obtaining samples at the Site;

5. Inspecting and copying records or other documents available pursuant to Section XI (Submission of Documents, Sampling and Analysis);

6. Performing the Work if EPA takes over any part of the Work pursuant to Subpart AA of Section VII (Work To Be Performed); and

7. Performing any of the tasks described in Subpart B of Section VII (Work To Be Performed).

F.1. Lockheed and Weber shall also provide access free of charge, consistent with any applicable government security requirements that are uniformly applied to all persons on the premises, to property either or both own(s) or control(s) to the Settling Work Defendants and the representatives of the Settling Work Defendants to the extent that such access is necessary for a Settling Work Defendant to perform the Remedial Design Work or Remedial Action Work. If either Settling Work Defendant seeks access pursuant to this Subpart and such access is refused, that Settling Work Defendant shall, within five days of such refusal, inform EPA in writing of the reasons it desires the access, the attempts it has made to obtain access and the impact a denial of access would have upon its ability to perform its obligations under this Decree, including any deadlines that might be affected.

2. The City shall provide, free of charge to any other Settling Party, an area at the Valley Forebay Facility located at 2030 North Hollywood Way, for the groundwater Treatment Plant, subject to area availability after excluding the area necessary

for the blending, booster and disinfection facilities. The total available area for all such facilities is shown in Appendix F ("Area F"). The City shall provide Area F free of all structures or personal property other than existing utility structures. The City shall also provide, free of charge to any other Settling Party, access from the City's public right of way to Area F for pipelines, utilities and related facilities (exclusive of the groundwater Treatment Plant, blending, booster and disinfection facilities, and monitoring or extraction wells). Lockheed shall be solely responsible for obtaining permission from nonparties that is needed to relocate any overhead or underground utility structures above or under the surface of Area F necessary to construct any facilities, including the groundwater Treatment Plant, to be constructed by Lockheed. Lockheed shall be solely responsible for relocating any such utility structures. The City shall also require, at the request of Lockheed, that any holder of an easement or franchise for a facility in Area F relocate such facility, provided that such relocation can be accomplished, pursuant to such easement or franchise, without cost to the City.

3. The City shall provide access free of charge to public rights of way it owns or controls within the City (i.e., streets, median strips, gutters, curbs, sidewalks) to Lockheed to the extent such access is necessary for Lockheed to perform its portion of the Remedial Design Work or Remedial Action Work. If Lockheed seeks access pursuant to this Subpart and such access is refused, Lockheed shall, within five days of such refusal, inform EPA in writing of the reasons it desires the access, the attempts it has

made to obtain access and the impact a denial of access would have upon its ability to perform its obligations under this Decree, including any deadlines that might be affected. The City shall also require, at the request of Lockheed, that any holder of an easement or franchise for a facility in the public right of way relocate such facility, provided that such relocation can be accomplished, pursuant to such easement or franchise, without cost to the City. Nothing in this Subpart shall interfere with the City's rights pursuant to Subpart E.2 of Section VI (Binding Effect).

4. Settling Defendants shall also provide access, as described in Subparts F.2 or F.3 of this Section, respectively, free of charge to property they own or control to any other potentially responsible party (including Lockheed) that is responsible (pursuant to an EPA order or a consent decree with EPA) for performing any of the tasks described in Supbart B of Section VII (Work To Be Performed) of this Decree; provided, however, that the Settling Defendants do not agree to provide such access voluntarily without a signed agreement with such other potentially responsible party (including Lockheed), containing terms substantively similar to those to which the Settling Defendants have agreed in Subparts G and H of this Section, but covering the tasks described in Subpart B of Section VII (Work To Be Performed). The access required to be provided pursuant to this Subpart shall be that access reasonably necessary

to enable any such potentially responsible party and its representatives to perform any of the tasks described in Subpart B of Section VII (Work To Be Performed) of this Decree.

G. Lockheed, Weber and the City do hereby agree to relieve, release, indemnify, defend, hold harmless and forever discharge the others and the others' respective officers, agents, employees, attorneys, administrators, affiliates, parents, subsidiaries, assigns, representatives, servants, insurers, successors, heirs and each of them, of and from any and all claims, rights, debts, liabilities, demands, obligations, liens, promises, acts, agreements, costs and expenses (including, but not limited to, attorneys' fees and costs), damages, actions and causes of action, of whatever kind or nature, (including without limitation, any statutory, civil or administrative claim), whether known or unknown, suspected or unsuspected, fixed or contingent, apparent or concealed, in any way based on, arising out of or related to or connected with its acts or omissions or the acts or omissions of its officers, agents, employees, attorneys, administrators, affiliates, parents, subsidiaries, assigns, representatives, servants, insurers, successors, heirs and each of them, in connection with or related to the performance of any Work.

H. Each Settling Defendant performing Work on the property of another Settling Defendant shall carry liability insurance in the amount of $5,000,000.00 (Five Million Dollars) for the benefit of the owner, and occupant (if any), of the property on which the Work is being performed.

I. The access and information gathering abilities provided pursuant to this Section are in addition to, and not in lieu of, any rights of access and information gathering granted to EPA and its employees, officers, and representatives by statute.

J. Any person obtaining access pursuant to this Section shall comply with all applicable provisions of the Worker Health and Safety Plan(s) described in the Statement of Work.

XI. SUBMISSION OF DOCUMENTS, SAMPLING AND ANALYTIC DATA

A. Each Settling Work Defendant shall submit to EPA the results of all sampling, and/or tests or other analytic data generated by that Settling Work Defendant or on its behalf, with respect to the implementation of this Consent Decree, in a summary form in the monthly progress reports described in Section VII (Work To Be Performed).

B. Upon a written request to a Settling Work Defendant's Project Coordinator by EPA's Project Coordinator at least fourteen days prior to a sampling event, that Settling Work Defendant shall provide EPA with a split or duplicate sample of any sample taken for purposes of implementing this Decree by that Settling Work Defendant or anyone acting on its behalf. The United States shall, pursuant to CERCLA Section 104, 42 U.S.C. § 9604, have the right to take any samples it deems necessary, including split samples of samples taken by Settling Work Defendants or anyone acting on Settling Work Defendants' behalf.

C. During the performance of the Work, each Settling Work Defendant shall notify EPA's Project Coordinator of any planned sampling to be conducted by that Settling Work Defendant or

anyone acting on its behalf with respect to implementation of the Consent Decree in the monthly progress report submitted prior to the sampling. Such notice shall provide at least fourteen (14) days notice of planned sampling to EPA unless otherwise agreed upon in writing. EPA shall be notified sixty (60) days prior to the disposal of any sample taken as part of the performance of the Work and shall have an opportunity to take possession of all or a portion of any such sample; provided, however, that such opportunity to take possession and the requirement of notification of disposal shall not apply to any continuous line monitoring or to any monitoring for VOCs.

D. Upon request, each Settling Work Defendant shall provide to EPA any analytical, technical or design data that are generated by or on behalf of that Settling Work Defendant in the course of performing the Work at the Site. Such information shall be provided to EPA within fifteen (15) days of a request by EPA if such information is in the possession of that Settling Work Defendant. If such information is under that Settling Work Defendant's control but not in its possession at the time of the request, such technical and design data shall be provided to EPA within thirty (30) days of the request and such analytical data shall be provided to EPA within sixty (60) days of the request. The Settling Parties recognize that the provisions of Section 104(e)(7)(F) of CERCLA apply to information generated by Settling Defendants with respect to the hazardous substances at the Site.

E. Upon written request by a Settling Work Defendant's Project Coordinator to EPA at least fourteen (14) days prior to a sampling event, EPA will provide to that Settling Work Defendant a split or duplicate sample of any sample collected by EPA or on its behalf for purposes of implementing this Consent Decree and the analytical results obtained from the sample. If EPA collects any samples pursuant to the Statement of Work or undertakes any other Work pursuant to the Statement of Work, EPA will attempt to notify the Settling Work Defendants' Project Coordinators at least fourteen (14) days in advance and permit Settling Work Defendants or their representatives to observe such Work; provided, however, that any failure by EPA to notify Settling Work Defendants pursuant to this Subpart shall not be deemed a violation of this Decree.

F. Each Settling Work Defendant reserves the right to assert that documents and other information that it submits to EPA are entitled to confidential treatment pursuant to Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7). For each such claim, the Settling Work Defendant submitting the information shall clearly mark each document as confidential and provide each such document to EPA. Any such claims shall be subject to EPA's confidentiality determination procedure pursuant to 40 C.F.R. Part 2. If a Settling Work Defendant does not make a confidentiality claim pursuant to CERCLA Section 104(e)(7), 42 U.S.C. § 9604(e)(7), at the time it submits information to EPA, such information may be made available to the public without any notice to the Settling Work Defendant.

G. The information gathering abilities provided pursuant to this Section are in addition to, and not in lieu of, any rights of information gathering granted to EPA by statute.

H.1. Lockheed shall provide the following data to the City at the same time that Lockheed is required to provide such information to EPA:

a. Analytical sampling results received by Lockheed or its representatives on extraction wells supplying water to the groundwater Treatment Plant;

b. Analytical sampling results on groundwater Treatment Plant influent, effluent and internal intermediate processes taken by Lockheed or its representatives.

2. Lockheed shall provide the following information to the City within sixty (60) days of receipt of a written request from the City:

a. All groundwater Treatment Plant operating logs and summary management reports;

b. All reports and study results generated by Lockheed or its representatives pertaining to groundwater Treatment Plant efficiency or operations;

c. Any other information that Lockheed is required to submit to EPA pursuant to this Section for which Lockheed does not claim confidentiality pursuant to Section 104(e)(7), 42 U.S.C. § 9604(e)(7).

I.1. The City shall provide to Lockheed, at the same time that the City is required to provide such information to EPA, analytical sampling results on blending facility influents, effluent and internal intermediate processes taken by the City or its representatives.

2. The City shall provide to Lockheed, within sixty (60) days of a written request from Lockheed, any other information that the City is required to submit to EPA pursuant to this Section for which the City does not claim confidentiality pursuant to Section 104(e)(7), 42 U.S.C. § 9604(e)(7).

3. Twenty days after the end of each month in which the City draws upon the Lockheed Trust Fund account established pursuant to Subpart H of Section XII (Financial Assurance and Trust Accounts), the City shall provide to Lockheed copies of the contractor invoices and documentation of internal expenses for any costs incurred by the City during the prior month which the draw from the Lockheed Trust Fund was intended to reimburse.

XII. FINANCIAL ASSURANCE AND TRUST ACCOUNTS

A.1. Subject to the provisions of Subpart C of this Section, Lockheed shall demonstrate its ability to complete the Work and to pay all costs, penalties and interest for which Lockheed is or may become responsible under this Decree by obtaining, and presenting to EPA for approval within thirty (30) days after the effective date of this Decree, one of the following items for the amount of $54,000,000.00:

a. Performance bond,

b. Letter of credit, or

c. Guarantee by a third party.

2. After Lockheed has been operating phase one for 18 months, or on the date that EPA approves Lockheed's Remedial Action Work Plan for phase two, whichever is later, Lockheed may reduce the financial assurance provided pursuant to this Section to the amount of $37,000,000.00.

3. After Lockheed has been operating phase two for 18 months, or on the date that EPA approves Lockheed's Remedial Action Work Plan for phase three, whichever is later, Lockheed may reduce the financial assurance provided pursuant to this Section to the amount of $23,000,000.00.

4. For purposes of this Section, "operation" of any phase shall be deemed to begin on the System Operation Date.

B. EPA may disapprove the financial assurance mechanism presented if, in EPA's determination, it does not provide adequate assurance that Lockheed is able to complete the Work. If Lockheed seeks to demonstrate its ability to complete the Work through a guarantee by a third party pursuant to Subpart A.3 of this Section, Lockheed shall demonstrate that the guarantor passes the financial test specified in 40 C.F.R. § 265.143(e). In determining whether or not such third party satisfies the criteria in 40 C.F.R. § 265.143(e), the amount required in Subpart A of this Section shall be used in place of "the sum of the current closure and post-closure cost estimates and the current plugging and abandonment cost estimates," referred to in 40 C.F.R. § 265.143(e).

C. In lieu of any of the three items listed in Subpart A above, Lockheed may present, for EPA's review and approval, internal or public financial information sufficient to satisfy EPA that Lockheed has sufficient assets to make additional assurances unnecessary. EPA shall approve such financial assurance if EPA determines, based on the information submitted, that Lockheed has met the criteria in 40 C.F.R. § 265.143(e). In determining whether or not Lockheed has met these criteria, the amount required in Subpart A of this Section shall be used in place of "the sum of the current closure and post-closure cost estimates and the current plugging and abandonment cost estimates," as referred to in 40 C.F.R. § 265.143(e). If Lockheed relies on internal or public financial information for financial assurance, Lockheed shall submit such information on an annual basis until this Consent Decree is terminated pursuant to Section XXXIV (Termination and Satisfaction). If EPA determines the financial assurances to be inadequate based on its review of Lockheed's initial submittal or on review of any annual submittal, Lockheed shall obtain one of the three other financial instruments listed above in Subpart A of this Section, within thirty (30) days of receiving notice of such determination. If Lockheed disputes a determination by EPA that any financial assurance provided pursuant to this Subpart C is inadequate, Lockheed shall maintain one of the three financial instruments listed in Subpart A during the pendency of the dispute.

D. Within sixty (60) days of the effective date of this Consent Decree, Weber shall establish a trust fund (the "Weber Trust Fund") in the amount of Three Million Seven Hundred and Fifty Thousand Dollars ($3,750,000.00). The instrument establishing the Weber Trust Fund (the "Weber trust agreement") shall provide that Lockheed may draw upon the amount in the Weber Trust Fund to pay costs incurred in performing the Work that Lockheed has agreed to perform pursuant to Section VII (Work To Be Performed); provided, however, that if EPA takes over such Work, Lockheed may no longer draw upon the Weber Trust Fund and EPA may, instead, draw upon any amounts remaining in the Weber Trust Fund to reimburse the Superfund for amounts incurred in performing such Work. Weber shall bear all costs related to the establishment and maintenance of the Weber Trust Fund; provided, however, that Weber may use interest earned on the Weber Trust Fund to pay maintenance fees related to the Weber Trust Fund. Any additional interest shall be included in the Weber Trust Fund and drawn upon for performance of the Work by Lockheed or EPA.

E. Weber shall submit a signed copy of the Weber trust agreement to EPA and Lockheed within sixty-five (65) days of the effective date of the Consent Decree.

F. The Weber trust agreement shall require the trustee to provide a statement of the Weber Trust Fund account to EPA, Weber and Lockheed on the following schedule. The trustee shall submit its initial statement by the tenth day of the first calendar month after the first month in which either Lockheed or EPA draws upon the Weber Trust Fund. A statement shall be submitted to

EPA, Weber and Lockheed on the tenth day of the first calendar month after each month in which either Lockheed or EPA draws upon the Weber Trust Fund.

G. This Decree does not require Weber to perform any of the Work described in Section VII (Work To Be Performed), including any additions or changes to such Work. Pursuant to this Decree, Weber's sole responsibility for funding such Work is the obligation to establish and fund the Weber Trust Fund described in Subparts D through F of this Section. The establishment and funding of such Weber Trust Fund shall entitle Weber to the covenant not to sue under Subpart A.2 of Section XVIII (Covenant Not To Sue).

H. Within sixty (60) days of the effective date of this Decree, Lockheed shall establish a trust fund (the "Lockheed Trust Fund" in the amount of Two Hundred Thousand Dollars ($200,000.00). The instrument establishing the Lockheed Trust Fund (the "Lockheed trust agreement") shall provide that, upon submission to the trustee of an invoice with supporting documentation, the City may draw upon the amount in the Lockheed Trust Fund (up to $200,000.00) to pay only those costs incurred by the City in designing and constructing the facilities necessary to transport treated groundwater from the Point of Delivery to the Valley Forebay Facility and necessary structural modifications and diffuser piping; provided, however, that if EPA takes over such Work, the City may no longer draw upon the Lockheed Trust Fund and EPA may, instead, draw upon any amounts remaining in the Lockheed Trust Fund (up to a total of $200,00.00 drawn by the City and EPA) to reimburse the Superfund for amounts incurred in

performing such Work. Lockheed shall bear all costs related to the establishment and maintenance of the Lockheed Trust Fund and receive any interest that accrues pursuant to the Lockheed trust agreement.

I. Lockheed shall submit a signed copy of the Lockheed trust agreement to EPA and the City within sixty-five (65) days of the effective date of this Consent Decree.

J. The Lockheed trust agreement shall require the trustee to provide a statement of the Lockheed Trust Fund account to the City, Lockheed and EPA on the following schedule. The trustee shall submit its initial statement by the tenth day of the first calendar month after the first month in which either the City or EPA draws upon the Lockheed Trust Fund. A statement shall be submitted to EPA, the City and Lockheed on the tenth day of the first calendar month after each month in which either the City or EPA draws upon the Lockheed Trust Fund. The Lockheed Trust Fund shall be terminated upon EPA's approval of the City's Interim Remedial Action Report, as defined in the Statement of Work. If any portion of the $200,000.00 principal remains in the Lockheed Trust Fund at the time of termination, such amount shall be returned to Lockheed.

XIII. COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS

A. All actions required to be taken pursuant to this Consent Decree shall be undertaken in accordance with the requirements of all applicable local, state and federal laws and regulations, including CERCLA, as amended, and in accordance with the NCP, as amended, and the ROD (as modified by the ESD and Subpart

F of Section VII (Work To Be Performed)). Except as provided in Section 121(e)(1) of CERCLA, 42 U.S.C. § 9621(e)(1), Lockheed shall obtain or cause its contractors to obtain all permits and approvals necessary under such laws and regulations for the Work it is required to perform. The City shall obtain or cause its contractors to obtain all permits and approvals necessary under such laws and regulations for the Work it is required to perform.

B. Each Settling Work Defendant shall include in all contracts or subcontracts into which it enters for the Work, provisions stating that the contractors or subcontractors, including their agents and employees, shall perform all activities required by such contracts or subcontracts in compliance with all applicable laws and regulations.

C. This Consent Decree is not, nor shall it act as, nor is it intended by the Settling Parties to be, a permit issued pursuant to any federal, state, or local statute or regulation.

D. All permits or other approvals required for the performance of the Work, including permits for any offsite disposal of hazardous substances, shall be identified in each Settling Work Defendant's Plan(s) for Satisfaction of Permitting Requirements, Final Remedial Design Report(s), and Final Remedial Action Work Plan(s), which are described in the Statement of Work.

E. Settling Work Defendants shall dispose of any materials taken off the Site in compliance with all applicable provisions of EPA's Revised Procedures for Implementing Off-Site Response Actions ("Off-Site Policy")(EPA OSWER Directive, 9834.11, November 13, 1987).

XIV. RETENTION OF RECORDS

A. Each Settling Work Defendant shall preserve and retain and shall instruct its contractors, subcontractors, and anyone else acting on its behalf to preserve and retain all records and documents (in the form of originals or exact copies or, in the alternative, in micrographic storage of all originals) in their possession or control developed in the course of performing the Remedial Action Work regardless of any document retention policy to the contrary, for five (5) years after certification of completion of the Work pursuant to Section XXXIV (Termination and Satisfaction). However, at any time during this five-year period, a Settling Work Defendant may deliver to the EPA Project Coordinator originals or copies of all non-privileged records and documents that it is required to preserve and retain under this Subpart A and thereby absolve itself of any further responsibility to preserve and retain such non-privileged records and documents. The obligation to preserve and retain any allegedly privileged documents shall remain until the end of the five (5) year period.

B. If a Settling Work Defendant asserts a privilege with respect to any document requested by EPA, it shall, upon request by EPA, provide an identification of such document by date, addressee(s) and addressor(s) and the basis for asserting privilege within twenty (20) days of the request by EPA. Settling Work Defendants may assert any privilege recognized by federal law. If a Settling Work Defendant decides to deliver to EPA all non-privileged documents pursuant to Subpart A of this

Section, that Settling Work Defendant shall also provide to EPA at that time a list of all documents which it is required to preserve and retain pursuant to Subpart A but which it is not turning over based on a claim of privilege. At EPA's request, that Settling Work Defendant shall identify each such document by date, addressee(s), and addressor(s) and shall provide the basis for asserting a privilege within twenty (20) days of the request by EPA. A Settling Work Defendant may assert any privilege recognized by federal law. If EPA disagrees with a Settling Work Defendant's characterization of a document as privileged, EPA may request that that Settling Work Defendant produce the document. The Settling Work Defendant(s) shall either comply with such request or invoke the dispute resolution procedures of Section XX (Dispute Resolution).

XV. REIMBURSEMENT OF PAST COSTS

A. In full and complete settlement of Lockheed's liability to the United States for all Past Response Costs incurred by the United States with respect to the Site, Lockheed shall reimburse the Superfund in the amount of $1,958,929.72. Lockheed shall, within thirty (30) days of the effective date of this Consent Decree, remit a certified or cashiers check for such amount to the address listed below:

U.S. Environmental Protection Agency, Region IX
Superfund Accounting
P. O. Box 360863M
Pittsburgh, PA 15251
Attention: Collection Officer for Superfund

B. Lockheed shall send a transmittal letter with the check described in Subpart A of this Section. The transmittal letter shall contain Lockheed's complete and correct address, the Operable Unit name, and the civil action number. Lockheed shall also state in the transmittal letter that $124,307.44 of the funds are to be applied to site spill identifier ("SSID") #L6 and $1,834,622.28 of the funds are to be applied to SSID #59. Lockheed shall send a copy of the transmittal letter and a copy of the check to the United States Department of Justice at the address indicated in Section XXIII (Form of Notice). Lockheed shall also send a copy of the check and a copy of the transmittal letter to the EPA Project Coordinator and the EPA Assistant Regional Counsel at the addresses listed in Section XXIII (Form of Notice). If Lockheed does not reimburse the Superfund in the amount specified in Subpart A of this Section within thirty (30) days of the effective date of this Consent Decree, then interest on the unpaid amount shall begin to accrue thirty (30) days after the effective date of this Consent Decree, at the rate specified in Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).

XVI. REIMBURSEMENT OF FUTURE RESPONSE COSTS

A. Lockheed agrees to reimburse the United States for any Future Response Costs which the United States (1) incurs in connection with the Site prior to the termination of this Consent Decree pursuant to Section XXXIV (Termination and Satisfaction) and (2) submits to Lockheed for payment pursuant to this Section. After this Decree becomes effective, EPA shall submit to Lockheed, no more frequently than annually, documentation of Fu-

ture Response Costs incurred by the United States; provided, however, that failure to include all such costs in the submittal during any particular calendar year will not preclude EPA from submitting such costs in any subsequent year. Lockheed does not agree to pay interest on any costs except as specifically provided for in this Decree.

B. Interest at the rate specified in Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), shall accrue on any unpaid Future Response Costs beginning thirty (30) days after Lockheed's receipt of EPA documentation with respect to such costs. Lockheed agrees to reimburse the United States for Future Response Costs and any interest due within sixty (60) days of receipt of the documentation for such costs. EPA's documentation with respect to such costs shall consist of (1) an Agency Financial Management System Summary report ("SPUR") or an equivalent report, and (2) to the extent that they are not included in such SPUR or equivalent report (a) a summary of EPA's indirect and interest cost calculations and (b) a summary of costs incurred by the Department of Justice; provided, however, that EPA is not required to include in such documentation any interest cost calculation for interest which may accrue after Lockheed's receipt of the documentation. EPA shall also state in a cover letter what specific amount of the Future Response Costs in its annual submittal corresponds to each SSID number.

C. Payments shall be made by certified check for the amount of costs demanded made payable to the "EPA-Hazardous Substances Superfund." Two separate checks shall be sent if Future Response

Costs under both SSID #L6 and SSID #59 are included in EPA's documentation. With each check, Lockheed shall send a transmittal letter which shall include the correct name and address of Lockheed, the applicable site spill identifier number (SSID #L6 or #59, as identified in EPA's cover letter), the Operable Unit name, and the civil action number. A copy of each such check and a copy of the transmittal letter shall be sent to the EPA Project Coordinator and to the United States Department of Justice, at the addresses set forth in Section XXIII (Form of Notice).

D. Checks should specifically reference the identity of the Site and be sent to:

U.S. Environmental Protection Agency
Region IX
Superfund Accounting
P.O. Box 360863M
Pittsburgh, PA 15251
Attention: Collection Officer for Superfund

E. Payments made pursuant to this Section or Section XV (Reimbursement of Past Costs) shall not constitute an admission by Lockheed of any liability to the United States or any other person or entity.

XVII. RESERVATION AND WAIVER OF RIGHTS

A. The United States reserves the right to take any enforcement action pursuant to CERCLA and/or any other legal authority, including the right to seek injunctive relief, monetary penalties, and punitive damages, for any civil or criminal violation of law or this Consent Decree, except that the United States agrees not to seek more than $25,000 per day per violation in civil penalties, including stipulated penalties.

Except as specifically waived in this Decree, Settling Defendants reserve all defenses to any such enforcement action by EPA. Notwithstanding compliance with the terms of this Consent Decree, including completion of the Work, Lockheed is not released from liability for any matters other than Covered Matters and Weber and the City are not released from liability for any matters other than Covered Matters and the tasks described in Subpart B of Section VII (Work To Be Performed).

B. Subject to the dispute resolution provisions of Section XX (Dispute Resolution), the United States reserves the right to disapprove of Work performed by a Settling Work Defendant that is not in compliance with this Consent Decree. Subject to the dispute resolution provisions of Section XX (Dispute Resolution), the United States also reserves the right to compel a Settling Work Defendant pursuant to this Decree to perform tasks in addition to those detailed in the Statement of Work if such tasks are necessary to meet the requirements that Section VII (Work To Be Performed) imposes upon that Settling Work Defendant.

C. The United States reserves the right to undertake remedial design and remedial actions, including operation and maintenance activities (including any operation and maintenance activities which are not part of the Work), at any time and to seek to recover all costs of those actions from Settling Defendants; provided, however, that the United States agrees not to attempt to recover the costs of performing the tasks described in Subpart B of Section VII (Work To Be Performed) from the City if the City is in full compliance with the terms of this Decree or

from Weber if Weber is in full compliance with the terms of this Decree. The United States agrees not to undertake any part of the Work unless (1) the Settling Work Defendant responsible for that part of the Work fails to perform in an adequate and timely manner any Work for which it is responsible or (2) EPA, pursuant to Subpart D of Section XVIII (Covenant Not To Sue), determines that performance of any additional remedial action tasks related to the Work (including identification of a new or changed applicable or relevant and appropriate requirement pursuant to Subpart M.2 of Section VII (Work To Be Performed)) are required and Settling Defendants do not agree to perform these additional tasks.

D.1. The Settling Parties recognize and acknowledge that the settlement embodied in this Consent Decree may result only in a partial remediation of conditions at the Site and will result only in partial implementation of the ROD (as modified by the ESD and Subpart F of Section VII (Work To Be Performed)). The Settling Defendants hereby waive the defenses of res judicata, collateral estoppel, and claim-splitting against the United States, but only with respect to the United States' right to pursue subsequent action regarding Settling Defendants' responsibility to pay for or perform response actions with respect to groundwater and soil contamination in the San Fernando Valley; provided, however, that this waiver shall not affect the enforceability of the covenants not to sue set forth in Section XVIII (Covenant Not To Sue). The United States hereby retains all of its information gathering and inspection rights and authorities under CERCLA, the

Resource Conservation and Recovery Act ("RCRA"), and any other applicable statute or regulation. Except as specifically provided in Section XVIII (Covenant Not To Sue) and Subpart C of this Section, EPA hereby reserves the right to take any additional response actions, including any enforcement action, pursuant to CERCLA, RCRA, and any other applicable statute or regulation (including the right to take enforcement action seeking to have Settling Defendants pay response costs for or perform any response actions that are not Covered Matters (including any tasks necessary to implement the ROD, as modified by the ESD and Subpart F of Section VII (Work To Be Performed), that are not part of the Work).

2. The Settling Parties recognize that this Decree does not cover all of the tasks necessary to implement the ROD (as modified by the ESD and Subpart F of Section VII)). EPA presently intends to seek to have these additional tasks performed through enforcement actions or judicial settlements with potentially responsible parties ("PRPs"). These PRPs may include the Settling Defendants, pursuant to the reservation of EPA's enforcement authority in Subparts C and/or D of this Section; provided, however, that the United States agrees not to take an enforcement action for the performance of or to recover the costs of the tasks described in Subpart B of Section VII (Work To Be Performed) against the City if the City is in full compliance with the terms of this Decree or against Weber if Weber is in full compliance with the terms of this Decree.

E. Settling Defendants reserve any and all defenses or rights they may have with respect to any actions concerning the Site, including any enforcement action by EPA pursuant to Subpart D of this Section, except any rights expressly waived in this Decree. Settling Defendants retain any and all rights, claims, remedies and defenses that they have or may have against any person, or entity, including potentially responsible parties, not expressly waived in this Decree, including any rights, claims, remedies and defenses they may have as against each other. This reservation shall not affect each Settling Defendant's obligation to perform its obligations under this Decree, and shall not affect EPA's ability to assess stipulated penalties in accordance with Section XIX (Stipulated Penalties).

F. Settling Defendants waive any rights they might have to challenge the United States' or the Court's authority to issue, enter into or enforce this Decree.

G. Settling Defendants waive any claims for damages or reimbursement from the United States, or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between Lockheed and/or the City and any person for performance of the Work on or relating to the Site, including claims on account of construction delays; provided, however, that nothing in this Consent Decree shall be interpreted as waiving, abrogating or resolving (1) any claims which any Settling Defendant has or may have based upon any alleged liability which the United States Department of Defense, any branch or division thereof, or any

predecessor agency has or may have for conditions at the Site pursuant to CERCLA Sections 106, 107, 113, 120 or 310, 42 U.S.C. §§ 9606, 9607, 9613, 9620, or 9659 or the Resource Conservation and Recovery Act ("RCRA") Section 7002, 42 U.S.C. § 6972 or (2) any claims which Lockheed or Weber have or may have with respect to the Site pursuant to any contract between Lockheed or Weber and the United States or between Lockheed or Weber and any government contractor(s). In agreeing to this reservation the United States does not admit liability for any such claims and expressly reserves any and all defenses it may have to any such claims. Nothing in this Consent Decree shall be interpreted as waiving, abrogating or resolving any rights or claims which Lockheed or Weber may have against the United States based upon any contract between Lockheed or Weber and the United States or between Lockheed or Weber and any government contractor(s).

H. Settling Defendants waive any rights they might otherwise have to initiate a challenge to the amount of stipulated penalties due per type of violation as set out in Subpart D or E of Section XIX (Stipulated Penalties) of this Decree. This waiver does not including a waiver of the right to dispute the underlying technical or schedule issues that may have given rise to the alleged penalties or whether the penalties allegedly due were calculated in the manner provided for in this Decree.

I. The Settling Parties recognize that as a result of the withdrawal of groundwater from the San Fernando Valley Basin during the performance of the Remedial Action Work, certain obligations to provide replacement water or to pay money in place

of providing such water will arise, pursuant to the final judgment entered in The City of Los Angeles v. The City of San Fernando, et. al., (Los Angeles Superior Court, Case No C650079, 1979). The Settling Parties agree that the City is responsible for meeting any such obligations to provide replacement water or to pay money in place of providing such water which arise under such judgment as a result of performance of the Remedial Action Work except that Lockheed is responsible for meeting any such obligations which arise under such judgment in connection with any water extracted pursuant to this Decree that the City is not required to accept at the Point of Delivery.

XVIII. COVENANT NOT TO SUE

A. 1. Except as provided in Subparts C, D, E and F of this Section, upon approval by EPA of the Certificate of Completion with respect to the Work pursuant to Subpart A of Section XXXIV (Termination and Satisfaction), the United States covenants not to sue the Settling Work Defendants with regard to Covered Matters. This Section is not, and shall not be construed as, a covenant not to sue either Settling Work Defendant if either or both Settling Work Defendant(s) do(es) not make all payments and perform all Work which Settling Work Defendants are required to make or perform by this Consent Decree. Neither Settling Work Defendant is entitled to a covenant not to sue if the other Settling Work Defendant fails to perform its obligations pursuant to this Decree. This covenant not to sue does not apply to any removal or remedial actions taken at the Site beyond those that are included in Covered Matters.

2. Except as provided in Subparts C, D, and E of this Section, upon fulfillment of Weber's obligations pursuant to Subparts D through F of Section XII (Financial Assurance and Trust Account), the United States covenants not to sue Weber with respect to Covered Matters and not to sue Weber to attempt to have Weber perform the tasks described in Subpart B of Section VII (Work To Be Performed) if Weber is in full compliance with the terms of this Decree.

3. Except as provided in Subparts C, D, E and F of this Section, upon entry of this Decree, the United States covenants not to sue the City to attempt to have the City perform the tasks described in Subpart B of Section VII (Work To Be Performed) if the City is in full compliance with the terms of this Decree.

B. Settling Defendants hereby release and covenant not to sue the United States for any claim, counter-claim, or cross-claim asserted, or that could have been asserted up to and including the effective date of this Consent Decree related to or arising from this Consent Decree or groundwater contamination at the Site; provided, however, that nothing in this Consent Decree shall be interpreted as waiving, abrogating or resolving (1) any claims which any Settling Defendant has or may have based upon any alleged liability which the United States Department of Defense, any branch or division thereof, or any predecessor agency has or may have for conditions at the Site pursuant to CERCLA Sections 106, 107, 113, 120 or 310, 42 U.S.C. §§ 9606, 9607, 9613, 9620 or 9659 or RCRA Section 7002, 42 U.S.C. § 6972 or (2) any claims which Lockheed or Weber has or may have with

respect to the Site from the United States pursuant to any contract between Lockheed or Weber and the United States or between Lockheed or Weber and any government contractor(s). In agreeing to this reservation the United States does not admit liability on any such claims and expressly reserves any and all defenses that it may have to any such claims. Except as expressly set forth in this Decree, Settling Defendants do not waive any claim against and do not release or covenant not to sue the United States with respect to any matter.

C. Settling Defendants are expressly not released from, and the provisions of Subpart A of this Section shall not apply to, any matter not expressly addressed by this Consent Decree, including, but not limited to the following claims:

1. Claims based on a failure of a Settling Defendant to meet the requirements of this Decree;

2. Any other claims of the United States for any other costs or actions necessary at the Site which are not Covered Matters, including any remedial activities that are necessary to implement the ROD (as modified by the ESD and Subpart F of Section VII (Work To Be Performed)), other than the Work, except insofar as Weber and the City are entitled to a covenant not to sue, pursuant to Subpart A of this Section, for the tasks described in Subpart B of Section VII (Work To Be Performed);

3. Claims based on liability of Lockheed, Weber and/or the City arising from the past, present, or future disposal of hazardous substances outside of the Site;

4. Any claim or demand for damage to federal property located any place that the Work is being performed;

5. Claims based on criminal liability;

6. Claims based on liability for damage to natural resources as defined in CERCLA;

7. Claims based on liability for hazardous substances removed from the Site;

8. Claims for Future Response Costs (and interest thereon) that become due and payable pursuant to Section XVI (Reimbursement of Future Response Costs) of this Consent Decree, but which Lockheed does not pay by the date any such amounts are due;

9. Claims based on liability for future monitoring, oversight, or other response costs incurred by the United States except as those expenses are Covered Matters; or

10. Liability for any violations of federal or State law which occur during performance of the Work.

D. Notwithstanding any other provisions of this Consent Decree, the United States reserves the right to institute proceedings in this action, or in a new action, or to issue an Order seeking to compel Lockheed and/or the City and/or Weber to perform the following tasks with respect to Covered Matters:

1. Perform any additional response work, including changes in the Work, at or related to the Site; or

2. Reimburse the United States for response costs and reimburse the State for its matching share of any response actions undertaken under CERCLA with respect to Covered Matters, relating to the Site, if:

a. for proceedings prior to EPA certification of completion of the Work pursuant to Section XXXIV (Termination and Satisfaction),

i. conditions at the Site, previously unknown to the United States, are discovered after the entry of this Decree, or

ii. information is received, in whole or in part, after entry of this Decree, and these previously unknown conditions or this information indicates that the Remedial Action previously selected by EPA is not protective of human health and the environment;

b. for proceedings subsequent to EPA certification of completion of the Work pursuant to Section XXXIV (Termination and Satisfaction),

i. conditions at the Site, previously unknown to the United States, are discovered after the certification of completion by EPA, or

ii. information is received, in whole or in part, after the certification of completion by EPA, and these previously unknown conditions or this information indicates that the Remedial Action previously selected by EPA is not protective of human health and the environment.

E.1.a. The reservation contained in Subpart D of this Section pertains only to additional tasks related to the Work. The United States does not have to meet the standards contained in Subpart D to seek to have Lockheed perform additional tasks that are excluded from the definition of the Work. Lockheed retains any and all defenses to an action by EPA to have Lockheed perform additional tasks not required by this Decree except those defenses waived in Subpart D.1 of Section XVII (Reservation and Waiver of Rights).

b. The reservation contained in Subpart D of this Section pertains only to additional tasks related to the Work. The United States does not have to meet the standards contained in Subpart D to seek to have Weber perform additional tasks that are excluded from the definition of the Work; provided, however, that EPA agrees not to seek to have Weber perform the tasks described in Subpart B of Section VII if Weber has a covenant not to sue for those tasks, pursuant to Subpart A.2 of this Section. Weber retains any and all defenses to an action by EPA to have Weber perform additional tasks not required by this Decree except those defenses waived in Subpart D.1 of Section XVII (Reservation and Waiver of Rights).

c. The reservation contained in Subpart D of this Section pertains only to additional tasks related to the Work. The United States does not have to meet the standards contained in Subpart D to seek to have the City perform additional tasks that are excluded from the definition of the Work; provided, however, that EPA agrees not to seek to have the City perform the tasks

described in Subpart B of Section VII if the City has a covenant not to sue for those tasks, pursuant to Subpart A.3 of this Section. The City retains any and all defenses to an action by EPA to have the City perform additional tasks not required by this Decree except those defenses waived in Subpart D.1 of Section XVII (Reservation and Waiver of Rights).

2. If the United States institutes proceedings in this action or in a new action or issues an order pursuant to the reservation contained in Subpart D of this Section, each Settling Defendant reserves any and all defenses it may have to any portion of such action or order that requires a Settling Defendant to perform tasks in addition to any portion of the Work which that Settling Defendant agreed to perform in Section VII (Work To Be Performed) of this Decree.

F. Notwithstanding any other provision in this Consent Decree, this covenant not to sue shall not relieve Settling Defendants of their obligations to meet and maintain compliance with the requirements set forth in this Consent Decree. The United States reserves all its rights to take response actions at the Site with respect to the Work in the event that EPA determines that a Settling Work Defendant has failed to perform, in an adequate and timely manner, the Work it is required to perform pursuant to this Decree, and to seek to recover from that Settling Work Defendant response costs which:

1. Result from such a breach of the Decree;

2. Relate to any portion of the Work funded or performed by the United States; or

3. Are enforcement costs incurred by the United States associated with the Site.

G. Nothing in this Consent Decree shall constitute or be construed as a release from, or a covenant not to sue regarding, any claim, cause of action, or demand in law or equity against any person, firm, trust, joint venture, partnership, corporation or other entity not a signatory to this Consent Decree for any liability it may have arising out of or relating to the Site.

H. The Settling Parties agree that the United States shall be under no obligation to assist Settling Defendants in any way in defending against suits for contribution brought against Settling Defendants, including any which allege liability for matters covered by this covenant not to sue.

XIX. STIPULATED PENALTIES

A.1. Unless excused by EPA or a force majeure event, Lockheed shall be liable for stipulated penalties to the United States, as set forth in Subpart D of this Section, for each failure by Lockheed to comply with the requirements of this Consent Decree. Lockheed shall not be liable for stipulated penalties for failure to meet requirements that are solely the obligation of the City pursuant to this Decree.

2. Unless excused by EPA or a force majeure event, the City shall be liable for stipulated penalties to the United States, as set forth in Subpart E of this Section, for each failure by the City to comply with the requirements of this Consent Decree. The

City shall not be liable for stipulated penalties for failure to meet requirements that are solely the obligation of Lockheed pursuant to this Decree.

B.1. Any reports, plans, specifications, schedules, deliverables, appendices, and attachments required by this Decree or the Statement of Work, are, upon approval by EPA, incorporated into this Decree. A failure by a Settling Work Defendant to comply with applicable EPA-approved reports, plans, specifications, schedules, deliverables, appendices, or attachments shall be considered a failure to comply with this Decree and shall subject that Settling Work Defendant to stipulated penalties as provided in Subpart D or E of this Section.

2. Failure to comply with this Consent Decree shall also include but is not limited to the following:

a. Failure to submit deliverables specified in this Consent Decree or the Statement of Work in an acceptable manner and by the date due pursuant to this Decree; provided, however, that if the failure to comply results from a determination by EPA that a written deliverable is inadequate, the Settling Work Defendant required to submit the draft deliverable shall have ten (10) working days from receipt of EPA's written notice of disapproval, or such other longer time period as provided by EPA in the notice of disapproval, within which to correct the inadequacy and resubmit the deliverable for approval. Any disapproval by EPA shall include an explanation of why the deliverable is inade-

quate. If the resubmitted deliverable is inadequate, the Settling Work Defendant required to submit the deliverable shall be deemed to be in violation of this Decree.

b. Failure by a Settling Work Defendant to use best efforts to obtain any permits necessary for offsite Work which that Settling Work Defendant is required to perform or failure by a Settling Work Defendant to use best reasonable efforts to obtain necessary access agreements.

c. Failure to comply with any permit obtained for the purpose of implementing the requirements of this Consent Decree in any offsite location.

C. Stipulated penalties for failure to perform any requirement of this Consent Decree for which a deadline is specified shall begin to accrue on the first day after the deadline. Stipulated penalties for any other violation of this Consent Decree shall begin to accrue on the first day after the Settling Work Defendant(s) subject to penalties receive(s) notice from EPA of such violation. For any violation, stipulated penalties shall continue to accrue up to and including the day on which the noncompliance is corrected. EPA, in its sole discretion, may waive or reduce stipulated penalties. If EPA does not waive stipulated penalties, EPA shall provide the Settling Work Defendant(s) subject to penalties with written notice of the alleged deficiency in compliance with this Decree, and accrued stipulated penalties shall become payable thirty (30) days after Settling Work Defendant's receipt of EPA's written notice of deficiency; provided, however, that if EPA provides notice of an alleged

deficiency, and that deficiency continues, EPA shall not be required to provide any additional notice in order for stipulated penalties to continue to accrue and become payable.

D. With respect to Lockheed, stipulated penalties shall accrue in the following amounts, and, as provided in Subpart H of Section XVII (Reservation and Waiver of Rights), Lockheed may not dispute the amount of stipulated penalties due per type of violation:

1. Monthly Progress Reports and Quarterly Quality Assurance Reports

(a). Lockheed shall pay a stipulated penalty of $1,000 per day for the submission of a late or deficient Monthly Progress Report.

(b) Lockheed shall pay a stipulated penalty of $1,000 per day for the submission of a late or deficient Quarterly Quality Assurance Report.

2. MCL Effluent Violations

(a). At any time after the first sixty (60) days after the System Operation Date for each phase, if the concentration of TCE in the treated water is greater than 5.0 ppb, Lockheed shall be considered to have been out of compliance for each day for which the representative treated water sample (as defined in Subpart J.1 of Section VII (Work to Be Performed)) indicates that the concentration of TCE was greater than 5.0. ppb. Lockheed shall be subject to stipulated penalties in the amount of $5,000 per day for each such day of noncompliance.

(b). At any time after the first sixty (60) days after the System Operation Date for each phase, if the concentration of PCE in the treated water is greater than 5.0 ppb, Lockheed shall be considered to have been out of compliance for each day for which the representative treated water sample (as defined in Subpart J.1 of Section VII (Work To Be Performed)) indicates that the concentration of PCE was greater than 5.0 ppb. Lockheed shall be subject to stipulated penalties in the amount of $5,000 per day for each such day of noncompliance.

(c) At any time after the first sixty (60) days after the System Operation Date for each phase, if the concentration of a volatile organic compound ("VOC") other than TCE or PCE in the treated water is greater than the MCL in effect at that time for such VOC, Lockheed shall be considered to have been out of compliance for each day for which the representative treated water sample (as defined in Subpart J.1 of Section VII (Work To Be Performed)) indicates that the concentration of that VOC was greater than the MCL in effect, provided that the MCL in effect was promulgated on or before January 31, 1991. Lockheed shall be subject to stipulated penalties in the amount of $5,000 per day for each such day of noncompliance.

(d) At any time after the first sixty (60) days after an analytical sample result shows that the concentration of a contaminant in the treated water other than a VOC or nitrate is greater than the MCL in effect at that time for such contaminant, Lockheed shall be considered to have been out of compliance for each day for which the representative treated water sample (as

defined in Subpart J.1 of Section VII (Work To Be Performed)) indicates that the concentration of that contaminant was greater than the MCL in effect, provided that the MCL in effect was promulgated on or before January 31, 1991. Lockheed shall be subject to stipulated penalties in the amount of $3,000 per day for each such day of noncompliance.

3. Class I Violations

Period of Noncompliance	Penalty Per Day Per Violation
Days 1 - 5	$1,000
Days 6 - 30	$2,500
After 30 Days	$5,000

(a). Each failure to comply in a timely and adequate manner with the terms of this Consent Decree, including the Statement of Work, and any documents incorporated into this Decree pursuant to this Decree, that are not specifically listed as a violation anywhere else under Subparts D.1 or D.2 of this Section or under this Class I or under Classes II or III, and specifically including any failure to comply with the substantive standards of any applicable or relevant and appropriate requirement identified in the ROD (as modified by the ESD and Subpart F of Section VII (Work To Be Performed)) not identified as a violation under Subparts D.1 or D.2 of this Section or under Class II or Class III, provided that Lockheed shall not be subjected to stipulated penalties for any requirement of this Decree that is solely the obligation of the City pursuant to this Decree.

(b). Failure to submit any of the following:

i. Draft Conceptual Design Report(s)

ii. Draft Pre-Final Design Report(s)

iii. Draft Remedial Action Work Plan(s)

iv. Draft Remedial Design Work Plan(s)

v. Draft Preliminary Sampling Plan

vi. Draft Interim Remedial Action Report(s)

vii. Notification of Selection of RD Architect/Engineer

viii. Notification of Selection of RA Engineer

ix. Notification of Selection of RA Contractors/Subcontractors

x. Draft Plan(s) for Satisfaction of Permit Requirements

ix. Draft QA Project Plan(s)

x. Draft Operational Sampling Plan(s)

xi. Draft Operation and Maintenance Plan(s)

xii. Notification of Selection of Independent Quality Assurance Team

(c) Each violation of the following:

i. Obligation to hold Preconstruction Conference(s)

ii. Obligation to hold Pre-Final Inspection(s)

iii. Obligation to hold Final Inspection(s)

iv. Applicable or Relevant and Appropriate Requirements, other than MCL violations and South Coast Air Quality Management District Regulation XIII

4. Class II Violations

Period of Noncompliance	Penalty Per Day Per Violation
Days 1 - 5	$2,000
Days 6 - 30	$4,000
After 30 Days	$10,000

(a). Failure to submit any of the following:

i. Draft Final Remedial Design Report(s)

ii. Final Pre-Final Design Report(s)

iii. Final Health and Safety Plan(s)

iv. Final Preliminary Sampling Plan

v. Final Interim Remedial Action Report(s)

vi. Plan(s) for Satisfaction of Permit Requirements

vii. Remedial Design Workplan(s)

viii. Conceptual Remedial Design Report(s)

(b). Each violation of the following:

i. QA Project Plan(s)

ii. Remedial Design Work Plan(s)

iii. Plan(s) for Satisfaction of Permit Requirements

iv. California South Coast Air Quality Management District Regulation XIII

v. Preliminary Sampling Plan

vi. Remedial Action Work Plan(s)

5. Class III Violations

Period of Noncompliance	Penalty Per Day Per Violation
Days 1 - 5	$5,000
Days 6 - 30	$8,000
Days 30-60	$15,000

After 60 Days	$20,000

(a). Failure to submit any of the following:

i. Final Remedial Design Report(s)

ii. Remedial Action Work Report(s)

iii. Operation & Maintenance Plan(s)

iv. Final QA Project Plan(s)

(b). Each violation of the following:

i. Operation & Maintenance Plan(s)

ii. Operation Sampling Plan(s)

E. With respect to the City, stipulated penalties shall accrue in the following amounts, and, as provided in Subpart H of Section XVII (Reservation and Waiver of Rights), the City may not dispute the amount of stipulated penalties due per type of violation:

1. Monthly Progress Reports and Quarterly Quality Assurance Reports

(a). The City shall pay a stipulated penalty of $500 per day for the submission of a late or deficient Monthly Progress Report.

(b) The City shall pay a stipulated penalty of $500 per day for the submission of a late or deficient Quarterly Quality Assurance Report.

2. Class I Violations

Period of Noncompliance	Penalty Per Day Per Violation
Days 1 - 5	$500
Days 6 - 30	$1,000
After 30 Days	$2,500

(a). Each failure to comply in a timely and adequate manner with the terms of this Consent Decree, including the Statement of Work, and any documents incorporated into this Decree pursuant to this Decree, that are not specifically listed as a violation under Class II, and specifically including any failure to comply with the substantive standards of any applicable or relevant and appropriate requirement identified in the ROD (as modified by the ESD and Subpart F of Section VII (Work To Be Performed)) not identified as a violation under Class II; provided that the City shall not be subjected to stipulated penalties for any requirement of this Decree that are solely the obligation of Lockheed pursuant to this Decree.

3. Class II Violations

Period of Noncompliance	Penalty Per Day Per Violation
Days 1 - 5	$1,000
Days 6 - 30	$3,000
After 30 Days	$10,000

(a). Failure to submit any the following:

i. Plan for Satisfaction of Permitting Requirements

ii. QA Project Plan (or equivalent document(s) pursuant to Subpart E of Section VIII (Quality Assurance))

iii. Health and Safety Plan

iv. Operation and Maintenance Plan

(b). Failure to comply with any of the following:

i. Plan for Satisfaction of Permitting

Requirements

ii. QA Project Plan (or equivalent document(s) pursuant to Subpart E of Section VIII (Quality Assurance))

iii. Health and Safety Plan

iv. Operation and Maintenance Plan

F. All stipulated penalties owed pursuant to this Decree shall be paid by certified check made payable to the "EPA-Hazardous Substance Superfund" within thirty (30) days after receipt of EPA's notice of deficiency by the Settling Work Defendant that it failed to meet a requirement of this Decree. Interest shall begin to accrue on any penalty due thirty (30) days after that Settling Work Defendant receives EPA's notice of deficiency. A copy of the check and a copy of the letter forwarding the check, which letter shall include a brief description of the alleged violation, Settling Work Defendant's complete and correct address, the Operable Unit name, the Site spill identifier number (SSID #L6), the civil action number, and the date of receipt of EPA's notice of deficiency shall be submitted to the EPA Project Coordinator, the EPA Assistant Regional Counsel, and the United States Department of Justice at the addresses to which notice is to be provided pursuant to Section XXIII (Form of Notice). The check and the original copy of the letter shall be sent to:

U.S. Environmental Protection Agency
Region IX
Superfund Accounting
P.O. Box 360863M
Pittsburgh, PA 15251
Attention: Collection Officer for Superfund

If a Settling Work Defendant fails to pay stipulated penalties in accordance with this Section, the United States may institute proceedings in this action or a new action to collect the penalties and any interest due.

G. Notwithstanding the stipulated penalties provided for in this Section, and to the extent authorized by law, EPA may elect to assess civil penalties or bring an action in District Court to enforce the provisions of this Consent Decree. Payment of stipulated penalties shall not preclude EPA from electing to pursue any other remedy or sanction it may have to enforce this Consent Decree, and nothing in this Decree shall preclude EPA from seeking statutory penalties against a Settling Defendant who violates statutory or regulatory requirements, except that the total civil penalties (including stipulated penalties) collected by EPA for any such violation shall not exceed $25,000 per day per violation.

H. Each Settling Work Defendant may dispute any notice of deficiency issued to it. Penalties shall continue to accrue as provided in this Section but need not be paid until the following:

1. If the dispute is resolved by agreement or by decision or order of EPA which is not appealed to this Court, accrued penalties, plus interest at the rate specified in 28 U.S.C. § 1961, shall be paid to EPA within thirty (30) days of the agreement or Settling Work Defendant's receipt of EPA's decision or order;

2. If a Settling Work Defendant appeals EPA's decision pursuant to Subpart C of Section XX (Dispute Resolution) and prevails upon final resolution of the dispute, no stipulated penalties or interest thereon will be payable and any assessment of stipulated penalties and interest thereon shall be set aside in writing by EPA.

3. If a Settling Work Defendant appeals EPA's decision pursuant to Subpart C of Section XX (Dispute Resolution) and does not prevail upon final resolution of the dispute, all accrued stipulated penalties, plus interest at the rate specified in 28 U.S.C. § 1961, shall be paid within thirty (30) days of a final court order.

I.1. In the event that, pursuant to Subpart AA of Section VII (Work To Be Performed), EPA assumes performance of all or a portion of the Work that Lockheed is required by this Decree to perform, Lockheed shall, in lieu of any other penalties that might be payable under this Decree, pay a Work Assumption Penalty in the amount of one million dollars ($1,000,000.00). Lockheed is not required to pay a Work Assumption Penalty if EPA takes over the Work pursuant to Subpart C(2) of Section XVII (Reservation and Waiver of Rights).

2. In the event that, pursuant to Subpart AA of Section VII (Work To Be Performed), EPA assumes performance of all or a portion of the Work that the City is required by this Decree to perform, the City shall, in lieu of any other penalties that might be payable under this Decree, pay a Work Assumption Penalty in the amount of two hundred and fifty thousand dollars

($250,000.00). The City is not required to pay a Work Assumption Penalty if EPA takes over the Work pursuant to Subpart C(2) of Section XVII (Reservation and Waiver of Rights).

3. Payment of the Work Assumption penalties provided for in this Subpart H shall be in addition to any stipulated penalties which accrued prior to a Settling Work Defendant's receipt of EPA's notice of intent to take over all or a portion of the Work. Unless waived by EPA, such Work Assumption Penalty shall be payable within thirty (30) days after a Settling Work Defendant's receipt of notice that EPA intends to take over all or a portion of the Work. However, if that Settling Work Defendant invokes the dispute resolution procedure, payment of its Work Assumption Penalty shall be tolled until thirty (30) days after final resolution of the dispute; provided, however, that that Settling Work Defendant shall not pay any Work Assumption Penalty or, pre-assumption penalties related to the issue(s) on which that Settling Work Defendant prevails, or interest thereon if it is determined that EPA's takeover of the Work of that Settling Work Defendant was not permitted pursuant to Subpart Y of Section VII (Work to Be Performed).

XX. DISPUTE RESOLUTION

A. As required by Section 121(e) of CERCLA, 42 U.S.C. § 9621(e), the Settling Parties shall attempt to resolve expeditiously and informally any disagreements arising under or from the implementation of this Decree or any Work required hereunder.

B. If a dispute arises with respect to the meaning or application of this Decree, other than one regarding the amount of stipulated penalties due per type of violation, the dispute shall in the first instance be the subject of informal good-faith negotiations between EPA and the appropriate Settling Defendant(s) pursuant to Subpart C of this Section. In the event that the parties cannot resolve the dispute, the interpretation advanced by EPA shall be considered binding unless a Settling Defendant invokes the dispute resolution provisions of Subpart F of this Section. The decision to invoke dispute resolution shall not in and of itself constitute a force majeure. Settling Defendants reserve the right to dispute a determination by EPA that a force majeure has not occurred.

C. If a Settling Defendant has a good-faith objection to a decision by EPA with respect to Covered Matters or if a Settling Defendant believes that it has otherwise reached an impasse with EPA with regard to the requirements or interpretation of this Consent Decree, that Settling Defendant shall notify EPA's Project Coordinator and EPA's Office of Regional Counsel in writing of its position, within fourteen (14) days of receipt of EPA's decision or of determining that an impasse has been reached. EPA and the Settling Defendant shall then have fourteen (14) days from EPA's receipt of the written notice to resolve the matter. If possible, the dispute shall be resolved by informal telephone conferences. Either EPA or the Settling Defendant may also request that the parties meet and confer to try to resolve the dispute within the fourteen (14) day period. By the end of

the foregoing fourteen (14) day period or within seven (7) days after the parties meet and confer, whichever is later, EPA shall issue a written decision regarding the dispute.

D. Invocation of the Dispute Resolution procedure, by itself, will not postpone the Work schedule with respect to any disputed issue or stay the accrual of stipulated penalties. EPA agrees not to demand payment of penalties and interest accrued until completion of the Dispute Resolution process.

E. If a Settling Defendant chooses not to follow EPA's decision regarding the dispute, that Settling Defendant may file with the Court a petition briefly describing the nature of the dispute and its suggested resolution. Such a petition shall not be filed before EPA has issued its written determination pursuant to Subpart C of this Section and shall not be filed more than thirty (30) days after EPA has issued such determination. EPA shall have thirty (30) days to respond to the petition.

F. In any dispute resolution proceeding regarding selection of the remedial action, the Court shall uphold EPA's decision unless the Settling Defendant can demonstrate on the basis of the Administrative Record that EPA's decision was arbitrary and capricious or not otherwise in accordance with the law, as set forth in CERCLA Section 113(j)(2), 42 U.S.C. § 9613(j)(2). In any dispute involving a claim of force majeure, the Settling Defendant shall have the burden of proving by a preponderance of the evidence that any delay was, is or will be caused by events beyond its control and that the duration of any delay requested by a Settling Defendant is necessitated by the force majeure. In

all other disputes, the standard of review shall be determined by the Court in accordance with general principles of administrative law. In all disputes, the Settling Defendant shall have the burden of proof. Upon this Court's resolution of the dispute, stipulated penalties shall be paid or set aside in accordance with Subpart H of Section XIX (Stipulated Penalties). A finding that a Settling Defendant has prevailed shall not excuse stipulated penalties for failure to perform requirements not in dispute, except to the extent a Settling Defendant can show that it was impracticable to perform those requirements pending resolution of the dispute. If the Settling Defendant prevails, the deadlines for any requirements which Settling Defendants could not practicably meet during the dispute resolution proceedings shall be extended to account for any delays attributable to such proceedings.

XXI. FORCE MAJEURE

A. The Settling Parties agree that time is of the essence in the implementation of this Consent Decree. Settling Defendants shall perform all the requirements of this Consent Decree according to the schedules set forth herein or established hereunder or any approved modifications thereto unless their performance is prevented or delayed by events which constitute a force majeure.

B. For the purposes of this Decree, a force majeure is defined as any event arising from causes beyond the control of a Settling Defendant or its contractors, subcontractors or consultants, which delays or prevents that Settling Defendant's perfor-

mance notwithstanding that Settling Defendant's best efforts to avoid the delay. This requirement that a Settling Defendant exercise "best efforts to avoid the delay" includes using best efforts to anticipate any potential force majeure event and to address the effects of any force majeure event (1) as it is occurring and (2) following the force majeure event, such that any delay is minimized to the greatest extent practicable. Neither economic hardship nor increased costs shall be considered a force majeure. A force majeure may include, but is not limited to, extraordinary weather events, natural disasters, national emergencies, failure by the other Settling Work Defendant to perform Work that is necessary for the Settling Work Defendant asserting a force majeure to perform its obligations, delays in obtaining access to property not owned or controlled by the Settling Defendant, despite timely, best reasonable efforts to obtain such access, and delays in obtaining any required approval or permit from EPA or other governmental entities that result despite the Settling Defendant's submission of all information and documentation reasonably required for approval or applications for permits (and any supplemental information and documentation that may reasonably be requested) within a time frame that would permit the Work to proceed in accordance with the schedule contained in or established pursuant to this Decree.

C. If a Settling Defendant invokes force majeure, it shall have the burden of proving by a preponderance of the evidence that any delay was, is or will be caused by events beyond its control and that the duration of any extension requested is necessitated by the force majeure.

D. In the event of a force majeure, the time for performance of the activity delayed by the force majeure shall be extended for the minimum time necessary to allow completion of the delayed activity. The time for performance of any activity by any Settling Defendant dependent on the delayed activity shall be similarly extended. An extension of the time for performance of an obligation directly affected by the force majeure event shall not, of itself, extend the time for performance of any subsequent obligation unless the subsequent obligation is dependent upon the obligation directly affected. EPA shall determine whether requirements are to be delayed and the time period granted for any delay. Settling Defendants shall exercise best efforts to avoid or minimize any delay and any effects of a delay caused by a force majeure.

E. In the event of a force majeure, any Settling Defendant(s) asserting force majeure shall orally notify EPA's Project Coordinator or, in his or her absence, the Director of the Hazardous Waste Management Division, EPA, Region IX, immediately (no later than 48 hours after that Settling Defendant becomes aware of the force majeure) and shall notify EPA in writing within ten (10) calendar days after discovery of the force majeure. The written notification shall describe the force

majeure, the anticipated length of any delay, any measures which that Settling Defendant is taking or plans to take to mitigate the event or the delay and a schedule for implementation of such measures, and a statement as to whether, in the opinion of that Settling Defendant, such event may cause or contribute to an endangerment to public health, welfare, or the environment.

F. Failure of a Settling Defendant to comply with the notification requirements of this Section shall result in forfeiture of its right to claim a force majeure delay.

XXII. CONTRIBUTION PROTECTION

With regard to claims for contribution against Settling Defendants for matters addressed in this Consent Decree, the Settling Parties agree that Settling Defendants are entitled, as of the effective date of this Decree, to such protection from contribution actions or claims as provided in CERCLA Section 113(f)(2), 42 U.S.C. § 9613(f)(2); provided, however, that each Settling Defendant expressly waives the provisions of CERCLA Section 113(f)(2), 42 U.S.C. § 9613(f)(2), as against any other Settling Defendant, and reserves its right to pursue any other Settling Defendant(s) for the cost of response activities related to the Site and the City reserves its rights (if any) to pursue any other Settling Defendant for any damages to natural resources.

XXIII. FORM OF NOTICE

A. Except insofar as oral notification is specifically provided for in this Decree, when notification to or communication with the United States Department of Justice, EPA, Lockheed,

Weber or the City is required by the terms of this Consent Decree, it shall be in writing, postage prepaid, and addressed as follows:

As to EPA:

EPA Project Coordinator - Burbank Operable Unit
San Fernando Valley Basin Superfund Site
Hazardous Waste Management Division
Superfund Program, Region IX
United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

and

Assistant Regional Counsel - Burbank Operable Unit
San Fernando Valley Basin Superfund Site
Office of Regional Counsel, Regional IX
United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

As to the United States Department of Justice:

Chief
Environmental Enforcement Section
Environment and Natural Resources Division
United States Department of Justice
Ben Franklin Station, P.O. Box 7611
Washington, D.C. 20044-7611

As to Lockheed:

Ron Helgerson
Lockheed Engineering and Sciences Company
1903 West Empire, Unit 33
Burbank, California 91504

As to City:

General Manager
City of Burbank
Public Service Department
164 West Magnolia Blvd.
Burbank, California 91503-0631

and

Carolyn Barnes, Esquire
Office of the City Attorney
275 East Olive
Burbank, California 91510-6459

As to Weber:

George H. Hempstead
Weber Aircraft, Inc.
100 Wood Avenue, South
Iselin, New Jersey 08830

B. A Settling Party may change its address for purposes of this Decree by mailing notice of a change of address to the other Settling Parties.

C. In the case of written notices or submittals, a notice or submittal shall be deemed to have occurred on the date the notice or submittal is received by the party to whom notice must be given or a document must be submitted pursuant to this Decree.

XXIV. MODIFICATION

A. Except as provided in Subpart B of this Section and in Subpart B of Section XXIII (Form of Notice), there shall be no modification of this Consent Decree without written approval of the Settling Parties and entry by the Court.

B. The United States and the appropriate Settling Work Defendant(s) may agree to modify the Statement of Work and any documents or deliverables approved by EPA pursuant to this Decree. Any such modification must be in writing and must be signed by EPA and the Settling Work Defendant(s) affected by the modification, and shall be sent to all Settling Defendants within ten days of execution. No such modifications shall change (1) any of the requirements of the body of the Consent Decree (i.e.,

the Consent Decree exclusive of those attachments which have been incorporated into the Decree by reference), (2) the ROD or (3) the ESD.

XXV. ADMISSIBILITY OF DATA

In the event that the Court is called upon to resolve a dispute concerning implementation of this Consent Decree, the Settling Parties waive any evidentiary objections to the admissibility into evidence of data gathered, generated, or evaluated pursuant to this Decree that has been verified using the quality assurance and quality control procedures specified in the Quality Assurance Project Plan(s) approved pursuant to this Decree.

XXVI. EFFECTIVE DATE

This Consent Decree is effective upon the date of its entry by the Court.

XXVII. COMMUNITY RELATIONS

The Settling Work Defendants shall cooperate with EPA and the State in providing information to the public.

XXVIII. PUBLIC PARTICIPATION

A. The United States will publish notice of the availability for review and comment of this Consent Decree upon its lodging with the United States District Court as a proposed settlement in this matter in accordance with CERCLA Section 122(d)(2)(i), 42 U.S.C. § 9622(d)(2)(i).

B. The United States will provide persons who are not parties to the proposed settlement with the opportunity to file written comments during at least a thirty (30) day period following such notice. In addition, EPA intends to hold an informal

public meeting in Burbank, California during this period to receive either written or oral comments. The United States will file with the Court a copy of any comments received and its responses to such comments.

C. After the close of the public comment period, the United States will review all comments and determine whether the comments disclose facts or considerations which indicate that the proposed Decree is inappropriate, improper or inadequate and that it therefore should be modified. No Settling Party shall be bound by modifications to this Decree without its prior written consent, and consent to this Decree is not consent to such modifications.

XXIX. NOTICE TO THE STATE

EPA has notified the State of California pursuant to Section 106(a) of CERCLA, 42 U.S.C. § 9606(a) prior to entry of this Decree.

XXX. CONSISTENCY WITH THE NATIONAL CONTINGENCY PLAN

The Settling Parties agree, and the Court finds, that the Work, if performed in accordance with the requirements of this Consent Decree, is consistent with the provisions of the NCP, pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605.

XXXI. INDEMNIFICATION OF THE UNITED STATES

A.1. Notwithstanding any approvals which may be granted by the United States or other governmental entities, Lockheed shall indemnify the United States and any of its divisions, departments, agents or employees and save and hold the United States, any of its divisions, departments, agents or employees harmless

from any claims or causes of action (except to the extent that such indemnification or holding harmless would conflict with rights or obligations of the United States or Lockheed pursuant to any contract between Lockheed and the United States or between Lockheed and any government contractor(s)), arising from any injuries or damages to persons or property resulting from any acts or omissions of Lockheed, its contractors, subcontractors or any other person acting on its behalf in carrying out any activities pursuant to the terms of this Decree.

2. Notwithstanding any approvals which may be granted by the United States or other governmental entities, the City shall indemnify the United States and any of its divisions, departments, agents or employees and save and hold the United States, any of its divisions, departments, agents or employees harmless from any claims or causes of action, arising from any injuries or damages to persons or property resulting from any acts or omissions of the City, its contractors, subcontractors or any other person acting on its behalf in carrying out any activities pursuant to the terms of this Decree.

B. The indemnifications provided in Subpart A of this Section do not include an obligation to defend the United States or persons acting on its behalf in any action relating to this Consent Decree or the Work and do not extend to that portion of any claim or cause of action attributable to the negligent, wanton or willful acts or omissions of the United States, its contractors, subcontractors or any other person or entity acting on its behalf in carrying out activities at or related to the Site.

C.1. The United States shall use its best efforts to notify Lockheed of any claims or causes of action described in Subpart A.1 of this Section within sixty (60) days of receiving notice that such a claim or cause of action has been filed and shall use its best efforts to provide Lockheed with a reasonable opportunity to confer with the United States before the United States settles or resolves such a claim or cause of action; provided, however, that failure on the part of the United States to provide such notice and/or such opportunity to confer shall not preclude the United States from obtaining indemnification from Lockheed pursuant to this Section.

2. The United States shall use its best efforts to notify the City of any claims or causes of action described in Subpart A.2 of this Section within sixty (60) days of receiving notice that such a claim or cause of action has been filed and shall use its best efforts to provide the City with a reasonable opportunity to confer with the United States before the United States settles or resolves such a claim or cause of action; provided, however, that failure on the part of the United States to provide such notice and/or such opportunity to confer shall not preclude the United States from obtaining indemnification from the City pursuant to this Section.

3. Settling Defendants retain the right to intervene in any court action against the United States pursuant to Section 113(i) of CERCLA, 42 U.S.C. § 9613(i), if appropriate, and to seek intervention under the provisions of F.R.Civ.P. 24 and California Code of Civil Procedure Section 387.

XXXII. OTHER CLAIMS

This Consent Decree does not constitute a preauthorization of funds under Section 111(a)(2) of CERCLA, 42 U.S.C. § 9611(a)(2). In consideration of entry of this Consent Decree, Settling Defendants agree not to make any claims directly or indirectly against the Hazardous Substance Superfund for costs expended by or on behalf of Settling Defendants in connection with this Decree under CERCLA Sections 112 or Section 106(b)(2), 42 U.S.C. §§ 9612, 9606(b)(2), or any other provision of law and agree not to make any other claims against the United States for costs expended by or on behalf of any Settling Defendant in connection with this Consent Decree, except insofar as a Settling Defendant has reserved such rights pursuant to Subpart G of Section XVII (Reservation and Waiver of Rights).

XXXIII. CONTINUING JURISDICTION

The Court specifically retains jurisdiction over both the subject matter of and the parties to this action for the duration of this Consent Decree for the purpose of issuing such further orders or directions as may be necessary or appropriate to construe, implement, modify, enforce, terminate, or reinstate the terms of this Consent Decree or for any further relief as the interest of justice may require.

XXXIV. TERMINATION AND SATISFACTION

A. Upon Settling Defendants' completion of all of the Work to be performed pursuant to this Consent Decree, including achievement of all of the requirements imposed upon Settling Defendants by Section VII (Work To Be Performed) and Section XVI

(Reimbursement of Future Response Costs), Settling Work Defendants shall submit to EPA a written certification (Certificate of Completion) that the Work has been completed in accordance and in full compliance with this Decree. Within ninety (90) days of receipt of a request for such certification, EPA shall approve or disapprove the certification. If EPA fails to approve or disapprove the certification within ninety (90) days of receipt of a request for such certification, Settling Work Defendants may invoke the dispute resolution procedures of Section XX (Dispute Resolution). Upon EPA approval of the Certification of Completion, the covenants not to sue pursuant to Subpart A.1 of Section XVIII (Covenant Not To Sue) shall take effect.

B. Upon EPA's approval of the Certification of Completion, the requirements of this Decree, including Settling Work Defendants' obligations for Covered Matters, other than Section XIV (Retention of Records) and Subpart O of Section VII (Work To Be Performed), shall be deemed satisfied; provided, however, that such termination and satisfaction shall not alter the provisions of Section XVII (Reservation and Waiver of Rights), Section XXII (Contribution Protection), Section XVIII (Covenant Not To Sue) or any other continuing rights or obligations of the Settlings Parties under this Decree.

C. If at any point EPA takes over the remainder of the Work pursuant to Section VII (Work To Be Performed), then this Decree shall terminate when EPA finishes the Work; provided, however, that termination of this Decree shall not terminate Lockheed's obligations under Section XVI (Reimbursement of Future

Response Costs) to pay Future Response Costs incurred before the termination of this Decree, nor shall it alter the provisions of Section XVII (Reservation and Waiver of Rights) or any other continuing rights or obligations of the Settling Parties under this Decree.

XXXV. SECTION HEADINGS

The section heading set forth in this Decree and its Table of Contents are included for convenience of reference only and shall be disregarded in the construction and interpretation of any of the provisions of this Decree.

The undersigned Defendant hereby Consents to the foregoing Consent Decree.

For Defendant: The City of Burbank

Dated: March 27, 1991

Name: Thomas Flavin

Signature:

Title: Mayor, City of Burbank

ATTEST:

City Clerk

The undersigned Defendant hereby Consents to the foregoing Consent Decree.

For Defendant: Lockheed Corporation

Dated: March 13, 1991

Name: E. A. Thompson

Signature: E A Thompson

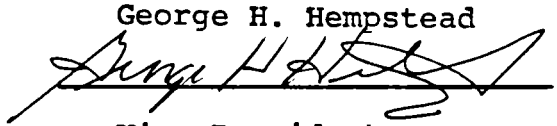
Title: Vice President - Operations
Lockheed Corporation

The undersigned Defendant hereby Consents to the foregoing Consent Decree.

For Defendant: Weber Aircraft, Inc.

Dated: March 18, 1991

Name: George H. Hempstead

Signature: 

Title: Vice President
Weber Aircraft, Inc.

FOR THE PLAINTIFF, UNITED STATES:

DATE: 7/29/91

BARRY M. HARTMAN
Acting Assistant Attorney General
Environment and Natural Resources Division
U.S. Department of Justice
Washington, D.C. 20044

United States Attorney

DATE: _____

Assistant United States Attorney

DATE: 5/6

RAYMOND B. LUDWISZEWSKI
Acting Assistant Administrator for
Office of Enforcement
U.S. Environmental Protection Agency
401 M. Street, S.W.
Washington, D.C. 20460

DATE: 7/1/91

WILLIAM A. WEINISCHKE
Trial Attorney
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Ben Franklin Station
Washington, D.C. 20044

Daniel W. McGovern

DATE: 3.28.91

DANIEL W. McGOVERN
Regional Administrator
U.S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, CA 94105

CONSENT DECREE
LIST OF APPENDICES

Appendix A. Record of Decision, June 30, 1989

Appendix B. Explanation of Significant Differences, November 21, 1990

Appendix C. Map of Corrected Well Locations

Appendix D. Statement of Work

Appendix E. Schematics

Appendix F. Plot Map of Valley Forebay Facility

San Fernando Valley Area 1

Superfund Site

Los Angeles County, California

RECORD OF DECISION

for the

BURBANK WELL FIELD

OPERABLE UNIT

United States Environmental Protection Agency
Region 9 - San Francisco, California
May, 1989

San Fernando Areas 1 Site

RECORD OF DECISION FOR THE BURBANK WELL FIELD OPERABLE UNIT

Concurrence - - Superfund Program

Alisa Greene — 4.28.89

Alisa Greene
Remedial Project Manager
State Programs Section (H-4-1)

Date

Paula Bisson — 5-1-89

Paula Bisson
Chief
State Programs Section (H-4-1)

Date

Paula Bisson — 5-1-89

for David Jones
Chief
Superfund Remedial Branch (H-4-A)

Date

for Jerry Clifford — 1 May 1989

Jerry Clifford
Assistant Director for Superfund
Hazardous Waste Management Division (H-4)

Date

San Fernando Areas 1 Site

RECORD OF DECISION FOR THE
BURBANK WELL FIELD OPERABLE UNIT

Concurrence - - Toxics & Waste Management Division

Jeff Zelikson
Director
Hazardous Waste Management Division

6-26-89
Date

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, Ca. 94105

26 JUN 1989

MEMORANDUM

SUBJECT: San Fernando Area 1 Site
Burbank Operable Unit
Record of Decision

FROM: Jeff Zelikson, Director
Hazardous Waste Management Division

TO: John Wise
Deputy Regional Administrator

Please find enclosed for your concurrence the Final Record of Decision (ROD) for the San Fernando Area 1 site, Burbank Well Field Operable Unit in Los Angeles County, California. We would appreciate receiving your concurrence by COB Thursday, June 29, 1989 so the ROD can be transmitted to the RA for signature on June 30. Please have your secretary contact Alisa Greene at 4-9096 so that your concurrence sheet can be collected after you have signed it.

Please sign below if you are in agreement with the following statement:

The enclosed Record of Decision package for the San Fernando Area 1 site, Burbank Well Field Operable Unit in Los Angeles County, California has been reviewed and I concur with the contents.

6.26.89
Date

John Wise
John Wise
Deputy Regional Administrator

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, Ca. 94105

01 MAY 1989

MEMORANDUM

SUBJECT: San Fernando Area 1 Site,
Burbank Operable Unit Record of Decision

FROM: for Jeff Zelikson, Director
Hazardous Waste Management Division

TO: Harry Seraydarian, Director
Water Management Division

Please find enclosed for your concurrence the Final Record of Decision (ROD) for the San Fernando Area 1 Site, Burbank Operable Unit in Los Angeles County, California. This document was submitted for review by your staff and we know of no unresolved issues. If you have any questions about this ROD, please contact Alisa Greene at 4-8015 or Jon Wactor (ORC) at 4-8042. Alisa would appreciate receiving this concurrence sheet by COB Wednesday May 10, 1989 so the ROD can be transmitted to the RA for signature. Please contact Alisa at the above phone number so that your concurrence sheet can be collected after you have signed it.

Please sign below if you are in agreement with the following statement:

The enclosed Record of Decision package for the San Fernando Area 1 Site, Burbank Operable Unit in Los Angeles County, California has been reviewed and I concur with the contents.

May 1, 1989
Date

for Harry Seraydarian, Director
Water Management Division

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, Ca. 94105

01 MAY 1989

MEMORANDUM

SUBJECT: San Fernando Area 1 Site,
Burbank Operable Unit Record of Decision

FROM: for Jeff Zelikson, Director
Hazardous Waste Management Division

TO: David Howekamp, Director
Air Management Division

Please find enclosed for your concurrence the Final Record of Decision (ROD) for the San Fernando Area 1 Site, Burbank Operable Unit in Los Angeles County, California. This document was submitted for review by your staff and we know of no unresolved issues. If you have any questions about this ROD, please contact Alisa Greene at 4-8015 or Jon Wactor (ORC) at 4-8042. Alisa would appreciate receiving this concurrence sheet by COB Wednesday May 10, 1989 so the ROD can be transmitted to the RA for signature. Please contact Alisa at the above phone number so that your concurrence sheet can be collected after you have signed it.

Please sign below if you are in agreement with the following statement:

The enclosed Record of Decision package for the San Fernando Area 1 Site, Burbank Operable Unit in Los Angeles County, California has been reviewed and I concur with the contents.

5/16/89
Date

David Howekamp, Director
Air Management Division

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, Ca. 94105

01 MAY 1989

MEMORANDUM

SUBJECT: San Fernando Areas 1 Site,
Burbank Operable Unit Record of Decision

FROM: for Jeff Zelikson, Director
Toxics & Waste Management Division

TO: Gail Cooper, Acting Regional Counsel
Office of Regional Counsel

Please find enclosed for your concurrence the Final Record of Decision (ROD) for the San Fernando Area 1, Burbank Well Field Operable Unit in Los Angeles County, California. This document was submitted for review by your staff and we know of no unresolved issues. If you have any questions about this ROD, please contact Jon Wactor (ORC) at 4-8042 or Alisa Greene (T-4-1) at 4-8015. Alisa would appreciate receiving this concurrence sheet by COB Monday April 24, 1989 so the ROD can be transmitted to the RA for signature immediately following. Please contact Alisa so that your concurrence sheet can be collected after you have signed it.

Please sign below if you are in agreement with the following statement:

The enclosed Record of Decision package for the San Fernando Area 1, Burbank Well Field Operable Unit in Los Angeles County, California has been reviewed and I concur with the contents.

5/4/89
Date

Gail Cooper
Gail Cooper
Acting Regional Counsel
Office of Regional Counsel

000126

RECORD OF DECISION

DECLARATION

SITE NAME AND LOCATION

San Fernando Valley Basin Area 1
Burbank Operable Unit
Los Angeles County, California

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the San Fernando Valley Basin Area 1, Burbank Operable Unit, in Los Angeles County, California, developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. Section 9601 et. seq.) and the National Contingency Plan (40 C.F.R. Section 300 et. seq.). This decision is based on the administrative record for these sites.

The State of California concurs on the selected remedy.

DESCRIPTION OF THE SELECTED REMEDY

The Burbank Operable Unit (OU) remedial action is the second to be taken at the San Fernando Valley Basin (SFVB) Area 1 site. In a September 1987 Record of Decision (ROD), EPA selected a remedy to address the public health threat posed by volatile organic compound (VOC) contamination of the Los Angeles Department of Water and Power (DWP) public supply wells located in the North Hollywood area. The North Hollywood OU remedial action has been constructed and became operational in March 1989. The remedial action selected in this decision document - - the Burbank Operable Unit - - is designed to achieve two objectives:

1) to partially control the movement and spread of groundwater contaminants in the Burbank OU area, while contributing to aquifer restoration at the SFVB Area 1 National Priority List (NPL) site; and

(2) to address the public health threat posed by contamination of the City of Burbank's public water supply wells by providing residents in the area with a water supply that meets State and Federal drinking water standards.

This remedial action for the Burbank Operable Unit addresses a portion of the overall groundwater contamination problem in the SFVB Area 1,2,3 and 4 sites. It will control the migration of contamination in the groundwater basin where additional downgradient public water supply wells are threatened by contamination. It will also aid in aquifer restoration in the immediate Burbank OU area. The basinwide Remedial Investigation (RI) is currently being conducted by DWP to define the vertical and areal extent of contamination in the four San Fernando Valley Superfund areas. EPA will conduct the basinwide Feasibility Study (FS) and write the corresponding Record of Decision. (EPA also has the lead on the enforcement activities and Community Relations.) The basinwide RI/FS is expected to be released for public comment in 1992. The remedial action selected in this Burbank OU decision document will be incorporated in the remedial action for all four SFVB NPL sites.

The remedial action selected in this decision document incorporates the following components:

- extraction of groundwater from the most highly contaminated zones of the underlying aquifer using wells that are strategically located to maximize the efficiency of the system;
- extraction to capture groundwater containing 100 ppb or greater of TCE and 5 ppb or greater of PCE (flow rate of the system is proposed to be 12,000 gpm);
- construction of stripping (either air or steam) units to treat contaminated groundwater;
- installation of vapor phase GAC adsorption units to control VOC air emissions if air stripping technology is used;
- installation of monitoring wells to be placed on the border of the contaminant plume to monitor the extraction reliability of the system;
- treatment of contaminated water, at the effluent discharge point, to contaminant concentrations below MCLs and SALs; and
- use of the treated groundwater as a water supply for Burbank's Public Service Department's customers by feeding the treated water directly into Burbank's water distribution system.

DECLARATION

The selected remedy is protective of human health and the environment, attains Federal and State requirements that are applicable or relevant and appropriate for this remedial action, and is cost-effective. This remedy satisfies the statutory preference for remedies which employ treatment that reduces toxicity, mobility, or volume as a permanent solution and alternative treatment (or resource recovery) technologies to the maximum extent practicable. As part of the remedy, groundwater monitoring will be conducted to track contaminant levels in the Burbank Well Field and to monitor the performance of the extraction and treatment system to ensure adequate protection of human health and the environment. Periodic reviews will be conducted to analyze the effectiveness of the system.

Daniel W. McGovern
Regional Administrator

June 30, 1989
Date

RECORD OF DECISION

DECISION SUMMARY

1.0 SITE LOCATION AND DESCRIPTION

The area around the Burbank Well Field, located in the San Fernando Area 1 (North Hollywood) NPL site within the San Fernando Valley Basin (SFVB), has been designated an Operable Unit (OU). Figure 1 shows the location of the North Hollywood NPL site within the SFVB. Figure 2 shows the boundary of the study area for the OU within the North Hollywood NPL site and the approximate location of the proposed extraction wells. The entire Burbank Well Field lies within the political boundaries of the City of Burbank, California.

The SFVB is located in the Upper Los Angeles River Area (ULARA), which consists of the entire watershed of the Los Angeles River and its tributaries. The ULARA encompasses approximately 328,500 acres, of which 122,800 acres are alluvial deposits which fill the SFVB. The SFVB is bounded on the north and northwest by the Santa Susana Mountains, on the northeast by the San Gabriel Mountains, on the west by the Simi Hills, and on the south by the Santa Monica Mountains. These mountain ranges are shown in Figure 1.

Four distinct groundwater basins are located within the ULARA: the San Fernando (with 91.2 percent of the total valley fill, the Verdugo (with 3.6 percent of the total valley fill), the Sylmar (with 4.6 percent of the total valley fill), and the Eagle Rock (with 0.6 percent of the total valley fill). Because the SFVB Area 1 NPL site is located within the San Fernando groundwater basin, the following discussion focuses on the San Fernando groundwater basin.

The geology of the SFVB generally consists of alluvial deposits composed of unconsolidated gravels and sand interbedded with lenses of silt and clay. The overlying alluvial deposits range in thickness from a few inches at the base of the mountains to as much as 1,500 feet in the center of the SFVB. The Burbank Well Field is located in the eastern portion of the San Fernando Valley Basin (SFVB), which contains coarser sediments that transmit water at higher rates than the western area of the SFVB. Most of the production wells in the SFVB are located in this eastern area. Results of aquifer testing in the SFVB have shown that groundwater velocities in the eastern portion of the basin are much greater than in the western portion. Within the eastern portion of the SFVB, the velocities are estimated to be between 300 to 500 feet per year with localized velocities of more than three feet per day near well fields.

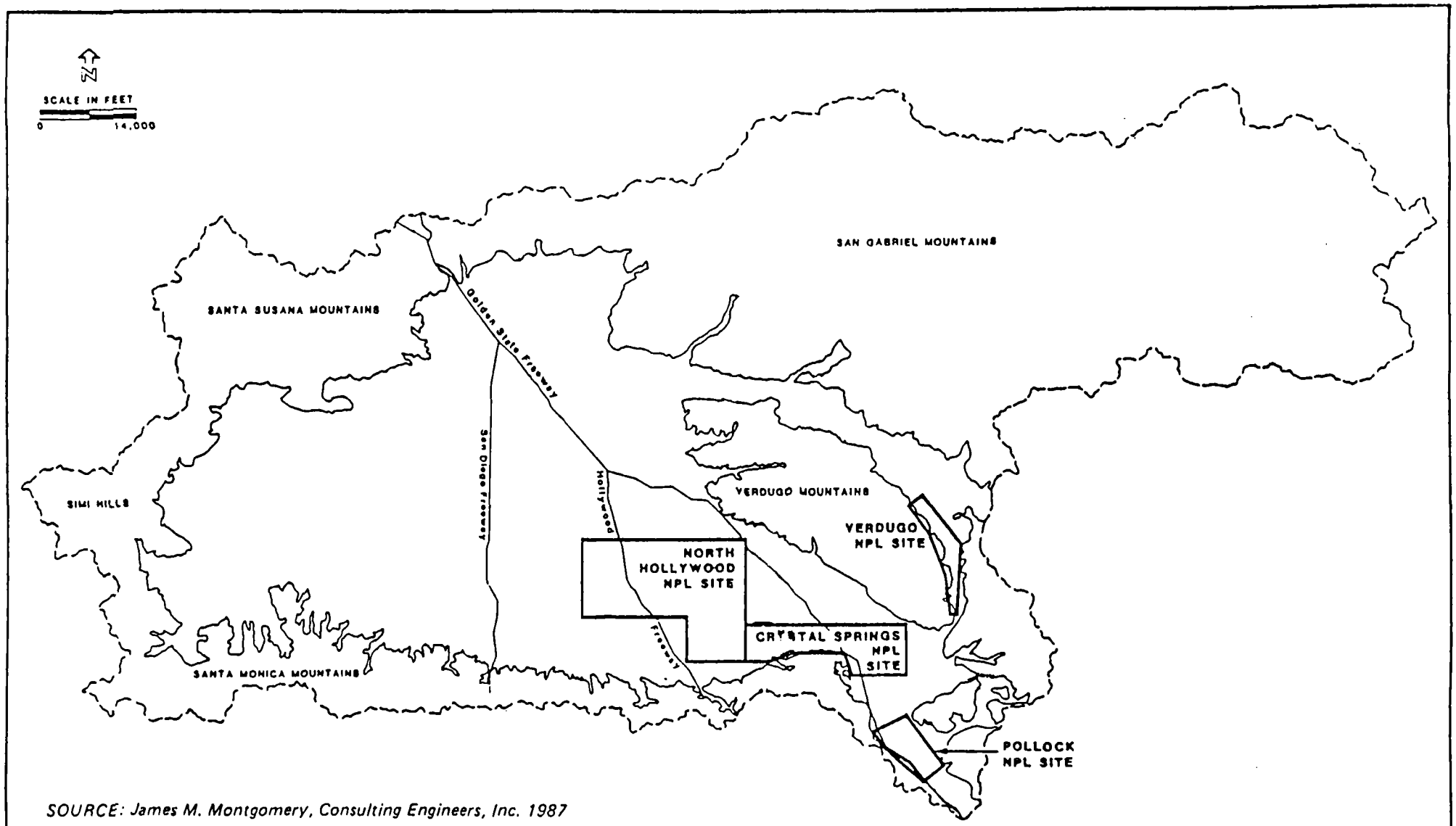


FIGURE 1 LOCATION OF GROUNDWATER BASINS AND NPL SITES IN UPPER LOS ANGELES RIVER BASIN

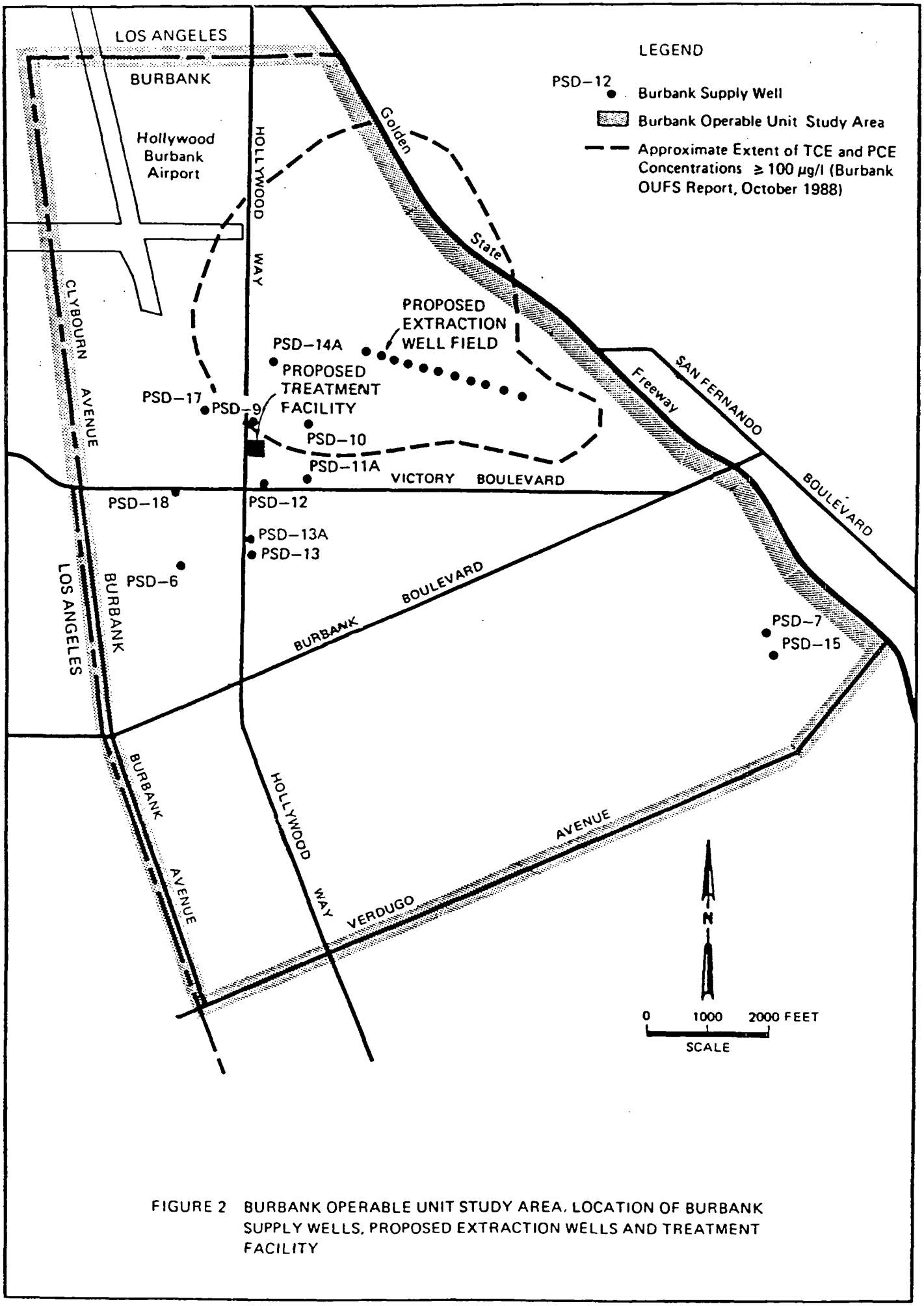


FIGURE 2 BURBANK OPERABLE UNIT STUDY AREA, LOCATION OF BURBANK SUPPLY WELLS, PROPOSED EXTRACTION WELLS AND TREATMENT FACILITY

Historically, groundwater recharge to the SFVB has occurred through both natural recharge from precipitation and artificial recharge from applied water and treated wastewater effluent. The total storage capacity of the SFVB is approximately 3 million acre-feet (acre-ft), two-thirds of which is located in the eastern portion of the basin. In 1979, the State Supreme Court granted the City of Burbank the right to extract 20 percent of the imported and reclaimed water for domestic use. Currently, this 20 percent amounts to an average of 4,700 acre-ft per year. The City of Burbank also has limited rights to physical solution water, that is, water normally supplied to other parties but which may be used by the City of Burbank upon payment of specified charges. In addition, the City of Burbank is entitled to store water in the SFVB and receives a credit for recharging treated wastewater effluent. As of March 1989, Burbank's water credits were approximately 38,000 acre-feet.

The City of Burbank's production wells have been shut down because the water they produce contains trichloroethylene (TCE) and perchloroethylene (PCE) in concentrations exceeding state and federal guidelines. Consequently, the City of Burbank now imports 100 percent of its water from the Metropolitan Water District of Southern California (MWD). In 1987, the City of Burbank imported approximately 23,100 acre-feet of water.

2.0 SITE HISTORY

In June 1986, at the request of the Los Angeles Department of Water and Power (DWP) and the California Department of Health Services (DHS), EPA designated four well fields within the San Fernando and Verdugo Groundwater Basins as National Priorities List (NPL) hazardous waste sites. Industrial chemicals have been detected in groundwater from these areas. Although each well field is listed separately on the NPL, EPA and DWP are managing the investigation of the four sites as if they are one single, large site.

The SFVB represents an important source of drinking water for the cities of Los Angeles, Burbank, Glendale, and La Crescenta, and provides these communities with enough water to serve approximately 600,000 residents.

Groundwater from the aquifers in the SFVB is used for commercial, industrial and residential purposes, and is especially important during years of drought. The groundwater that has become contaminated is difficult to replace. The current water supply from surface water via the Metropolitan Water District (MWD) may not always be available in the future because of periodic drought conditions and State and Federal water rights issues.

In late 1979, as a result of the passage of Assembly Bill 1803, DHS requested that all major water purveyors using groundwater conduct tests for the presence of certain industrial chemicals as

part of a statewide groundwater quality surveillance effort. These initial tests, completed in spring 1980, indicated that hazardous substances such as trichloroethylene (TCE) and perchloroethylene (PCE), were present in concentrations above State Action Levels (SALs) and Maximum Contaminant Levels (MCLs) in a number of water production wells in the San Fernando Valley Basin. Concentration levels in the wells have been increasing since 1980.

In 1987, the primary contaminant, TCE, was found at concentrations exceeding the State Action Level (SAL) in 48% of the SFVB's 120 production wells. In addition, PCE levels above State Action Level were present in 18% of the SFVB wells.

At present, the City of Los Angeles addresses well contamination by either shutting down heavily contaminated wells and providing alternate sources of drinking water, or blending contaminated water with other sources to achieve TCE and PCE concentrations in the served water that are below State Action Levels and Federal MCLs. Other communities, like the City of Burbank, have turned to the Metropolitan Water District of Southern California for surface water to augment their supplies.

In September 1987, EPA signed the North Hollywood OU Record of Decision to construct an extraction and aeration facility, to pump and treat contaminated groundwater in the North Hollywood area within the SFVB Area 1 NPL site. EPA provided funds to DWP through a cooperative agreement to implement this project. Also, EPA has joined with DWP and DHS in a Three Party Agreement that defines specific agency responsibilities, cost sharing, and other applicable provisions for construction, operation, and maintenance of this treatment system. The plant became operational in March, 1989.

The Burbank Operable Unit (OU) will be the second OU in the SFVB Area 1.

3.0 ENFORCEMENT

The SFVB NPL sites were first listed because of contaminated public supply wells. At the time of listing, the sources of contamination were unknown. EPA and the Los Angeles Regional Water Quality Control Board (RWQCB) have and are continuing to conduct numerous activities to identify sources of groundwater contamination in the San Fernando Valley Basin. The two agencies are working cooperatively in source identification and enforcement activities.

The RWQCB began source investigation activities in 1987 under the AB 1803 program. Under this program, an area (typically one square mile) surrounding contaminated public water supply wells is established within which a door-to-door industrial survey is completed. Inspections are conducted at all facilities potentially using solvents. Facilities that may have had a release

due to their handling or storage practices are requested to conduct a site assessment for their facility. If soil contamination is found, expanded soil and/or groundwater investigations are required. Later, a cleanup and abatement order may be issued requiring the site to be remediated.

In addition, the RWQCB conducts source identification and cleanup activities under the Underground Storage Tank, Solid Waste Assessment Testing (SWAT), and Waste Discharge Requirements programs.

Between August 1987 and 1988, EPA issued 145 RCRA Section 3007/ CERCLA Section 104 information request letters to facilities suspected of being users of chlorinated solvents in the San Fernando Valley Basin. Based on the responses received and information in state agency files, EPA issued 34 General Notice letters informing companies of their potential liability for the cleanup of the SFVB Area 1 and 2 NPL sites. On September 13, 1988 EPA held an information meeting for facilities identified as PRP's for the Burbank Well Field. To begin negotiations for cleanup of the Burbank OU area, EPA sent Special Notice Letters pursuant to CERCLA Section 122 in May 1989. Negotiations with PRP's are expected to end in September 1989. EPA and the RWQCB will continue basinwide source identification and enforcement activities throughout the basinwide RI/FS process.

4.0 COMMUNITY RELATIONS

The comment period for the OUFS Report and the Proposed Plan opened on October 19, 1988 and closed December 2, 1988. A public meeting was held on November 9, 1988 at the Thomas Jefferson Elementary School in Burbank and was attended by approximately 65 people.

Prior to the beginning of the public comment period, EPA and the City of Burbank published a notice both in the Los Angeles Times and the Burbank Leader. The notice briefly described the Proposed Plan and announced the public comment period and the public meeting. The notice also announced the availability of the Proposed Plan and the Draft OUFS Report for review at the information repositories established at the Burbank Public Library, California State University - Northridge Library, Los Angeles Department of Water and Power Library and the University of California - Los Angeles (UCLA) Research Library. (See fact sheet #1 or #2 for the locations.)

A fact sheet describing the Proposed Plan was delivered to the information repositories. Copies of the fact sheet were also mailed to the EPA general mailing list for the San Fernando Valley Basin sites, which included about 800 members of the general public, elected officials, agency, and media representatives. Fact sheets were also hand-delivered to residents near the proposed treatment facility location. In addition, the Burbank Water System Manager made an announcement of the public meeting

and presented the Proposed Plan on local cable television. He also had fact sheets available for distribution at the Burbank Public Service Department (PSD). Additionally, news stories appeared in the local newspaper, The Burbank Leader, and The Los Angeles Times and The Daily News.

From March 1987 to the present, EPA and DWP have met bimonthly or quarterly with members of the Community Workgroup (CWG). The members include elected officials, industry representatives, community-based public interest representatives, and residents from the San Fernando Valley/Los Angeles area. The purpose of the CWG meetings have been to discuss technical issues and management strategies involving the San Fernando Valley Basin Superfund project. CWG members have been updated on agency activities and have had the opportunity to express their concerns about the Burbank Operable Unit throughout the Remedial Investigation/Feasibility Study (RI/FS) process. EPA transmitted copies of the OUFS Report to CWG members for their review and comment.

The minutes of the community meeting were transcribed. The transcript and the attached response summary provide responses to the community comments submitted in writing during the public comment period, as well as oral comments made at the November 9, 1988 public meeting. The public transcript and response summary are part of the Administrative Record.

5.0 SCOPE AND ROLE OF THE OU WITHIN THE BASINWIDE SITE STRATEGY

As discussed in the Site History section, EPA is treating the SFVB Area 1 - 4 NPL sites as one large site. EPA and DWP are conducting one basinwide RI/FS for the 4 NPL sites. The RI/FS for the San Fernando sites was initiated in 1987. The major goal of the RI is to identify the sources, pathways and receptors of the contaminants and to characterize the nature and extent of the public health and environmental problems presented by the contamination. Major components of the RI include soil gas surveys, installation of monitoring wells, regional and site specific groundwater flow and solute transport modeling of the basin and sampling of the groundwater and soil. The FS will evaluate the necessity for and proposed extent of remedial actions. DWP has the lead for the RI and EPA has the lead for the FS.

EPA previously selected a remedy to address the public health threat posed by contamination of the public water supply wells located in the City of North Hollywood which lies within the SFVB Area 1 NPL site. The North Hollywood OU project was designed to control the migration of contaminants in the groundwater, while initiating aquifer restoration in the area. The contaminant plume has already affected numerous groundwater production wells in Area 1 of the SFVB and has precluded their use for public water supply. Construction and operation of the Burbank project is intended to further address the immediate problem in Area 1

while a more complete investigation of the Valley's overall groundwater problem is being done through the overall Remedial Investigation/Feasibility Study (RI/FS) process.

The Burbank response action is designed to achieve two objectives:

- To partially control the movement and spread of groundwater contaminants in the Burbank Operable Unit area, while contributing to aquifer restoration in the San Fernando Valley Basin Area 1 NPL site.

- To address the public health threat posed by contamination of the City of Burbank's public water supply wells by providing residents in the area with a water supply that meets State and Federal drinking water standards.

All of the City of Burbank's PSD wells are shut down due to the VOC contamination. Moreover, other downgradient public water supply wells are potentially threatened by contamination in the Burbank OU area. The response action selected in this decision document will be incorporated into the EPA response action for the entire San Fernando Superfund Areas 1-4.

As the operable units are addressing part of the overall problem, the RI/FS and subsequent ROD are intended to address the 4 SFVB NPL sites and the areas which impact these sites.

6.0 SUMMARY OF THE BURBANK OU SITE CHARACTERISTICS

Contamination of groundwater from the San Fernando Valley Basin wells was first discovered in 1980. Since then, various monitoring programs have been implemented. Results of LADWP's groundwater monitoring program conducted from 1981 through 1987 revealed that TCE and PCE had contaminated approximately 50 percent of the water supply wells in the eastern portion of the SFVGB at concentrations exceeding State and Federal drinking water standards. Figure 3 presents the approximate location of the TCE and PCE plumes in 1987.

The City of Burbank's wells are sampled routinely as part of the monitoring of 112 wells in the San Fernando Valley Basin. The concentration ranges of TCE and PCE found in the Burbank wells are presented in Tables 1 and 2. Several other VOCs have also been detected in the Burbank wells, including acetone, toluene, methylethylketone, carbon tetrachloride and trihalomethanes (THMs) which include chloroform, bromodichloromethane, dibromochloromethane, and bromoform. The concentrations of these other VOCs have not exceeded State Action Levels (SALs) or Federal MCLs. The Burbank wells have also been sampled for trace metals and other water quality parameters. Although groundwater

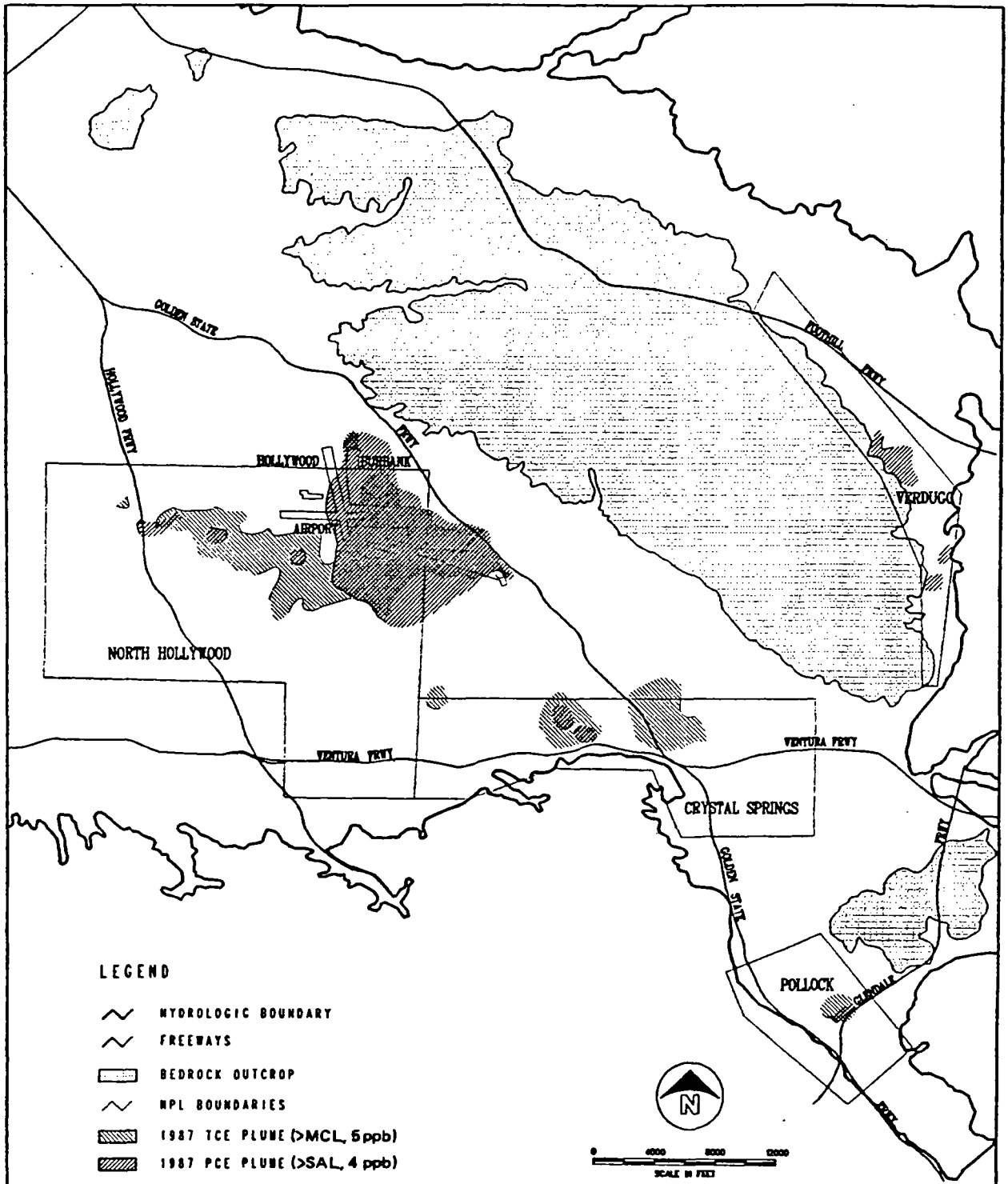


FIGURE 3

SAN FERNANDO VALLEY

1987 TCE AND PCE PLUMES

from one well had elevated concentrations of iron, the quality of the treated water from these wells is expected to meet Title 22 drinking water standards for metals.

The tables can be summarized as follows;

- TCE and PCE are the principal contaminants of concern. TCE and PCE are industrial solvents commonly used in the metal degreasing and dry-cleaning industries. Both are animal carcinogens and are suspected of being carcinogenic to humans. The Federal MCL for TCE is 5.0 ug/L. The SAL for PCE is 4.0 ug/L and the proposed State MCL is 5 ug/L.

- Other VOCs detected in trace quantities include methylene chloride, toluene, acetone, carbon tetrachloride, methylethylketone, and the THMs (chloroform, bromodichloromethane and dibromochloromethane). Methylene chloride is an industrial solvent commonly used in laboratories. It is carcinogenic in animals and is also a suspected human carcinogen. The SAL for methylene chloride is 40 ug/L. Toluene is an industrial solvent and a gasoline additive. It is carcinogenic in animals and is also a suspected human carcinogen. The SAL for toluene is 100 ug/L. Acetone is used as an industrial solvent and in the production of lubricating oils. A SAL for acetone has not been established. Carbon tetrachloride is an industrial solvent. It is carcinogenic in animals and is a suspected human carcinogen. The Federal MCL for carbon tetrachloride is 5.0 ug/L and the Federal MCLG is set at 0 ug/l. Methyethylketone is used as a solvent in nitrocellulose coatings and vinyl film manufacturing and in cements and adhesives. A SAL has not been established for methylethylketone. Most THMs found in finished drinking water are unwanted by-products caused by the chlorination process. THMs are formed by the chemical attack of hypochlorite on fulvic and humic acids. Chloroform also has a variety of industrial uses, including use as a solvent in lacquer manufacture. Chloroform is a suspected human carcinogen. The MCL for the sum of THMs is 100 ug/L.

- The wells with the shallowest perforated intervals (PSD 10 and PSD 12) and the ones that are the furthest upgradient (PSD 9, PSD 10, PSD 11A, PSD 13, PSD 14A, PSD 17) have historically had the highest concentrations of TCE and PCE. In contrast, PSD 6, PSD 7 and PSD 15 have low or nondetected concentrations of VOCs. PSD 6 is likely at the edge of the lateral extent of the VOC plume, and PSD 7 and PSD 15 are likely at the leading edge of the plume. For relative location of wells see Figure 2.

TABLE 1

SUMMARY OF VOLATILE ORGANIC CHEMICALS DETECTED IN BURBANK PUBLIC SERVICES DEPARTMENT WELLS

Burbank PSD Well No.	TCE Range of Concentration (ug/L)	PCE Range of Concentration (ug/L)	Other (ug/L)	Notes
6A	ND-1.0	ND-1.0	---	---
7	ND--4.9	ND-1.0	---	---
9	15-61.6	144	---	Two data points (1981 & 1984) then well abandoned
10	110-1800	56-590	---	---
11A	10-21	18-35	---	---
12	0.7-38	1.0-33	Carbontetra-chloride 3.4	Trend toward increasing contamin-ation since 3/83
13	0.1-34	ND-52	Chloroform 2.0	Trend toward increasing contamin-ation since 4/85
14A	76	140	---	Average of 19 samples analyzed by Lockheed
15	ND-4.1	ND-1.0	---	---
17	5.8	5.3-8.3	---	---
18	ND-38	ND-63	Trace concentrations of Chloroform Dichlorobromomethane	---

TCE = Trichloroethene
PCE = Tetrachloroethene
ND = Below Detection Limit

Sources:
1. LADWP, Remedial Investigation of San Fernando Valley Groundwater Basin, Current Situation Report, January 29, 1988.
2. JMM. GC/MS Analysis of Volatile Organics for Selected Burbank Wells. 1987-1988.

TABLE 2

SUMMARY OF VOLATILE ORGANIC CHEMICALS DETECTED
DURING CONTINUOUS MONITORING
CITY OF BURBANK

Well No.	Sampling Date	TCE Concentration (ug/L)	PCE Concentration (ug/L)	Other	Detection Limits (ug/L)
6A	6/3/87	ND	ND	---	0.5
	7/2/87	ND	ND	---	0.1
	8/4/87	ND	ND	---	0.1
	9/3/87	ND	ND	---	0.5
	10/5/87	ND	ND	---	0.5
	10/28/87	ND	ND	---	0.1
	12/1/87	ND	ND	---	0.1
	1/5/88	ND	ND	---	0.1
	2/9/88	ND	ND	---	0.5
7	5/29/87	3.7	ND	---	0.1
	7/7/87	4.9	1.0	---	0.1
	8/4/87	1.0	ND	---	0.1
	9/3/87	1.0	ND	---	0.5
	10/5/87	0.5	ND	Methylethylketone (1.2)	0.5
	10/28/87	0.8	ND	---	0.1
	12/1/87	0.8	ND	---	0.1
	1/5/88	0.4	ND	Toluene (0.8)	0.1
	2/9/88	ND	ND	---	0.5
10	7/2/87	1800	590	---	10
12	10/28/87	31	29	---	1.0
	12/1/87	22	17	Carbon Tetrachloride (3.4)	0.5
	1/5/88	38	31	Chloroform (1.2)	1.0
	2/9/88	24	16	Carbon Tetrachloride (3.3)	2.5
13	6/3/87	1.3	1.3	---	0.5
	7/2/87	10	15	Carbon Tetrachloride Chloroform	0.1

1 No value reported means that the VOC was detectable, but not quantifiable.
2 Sampling difficulties on this date make results questionable. Use data with qualification.
TCE = Trichloroethene
PCE = Tetrachloroethene
ND = Below Detection Limit
Source = City of Burbank (Analyzed by Montgomery Laboratories)

TABLE 2 - Continued

SUMMARY OF VOLATILE ORGANIC CHEMICALS DETECTED
DURING CONTINUOUS MONITORING
CITY OF BURBANK

Well No.	Sampling Date	TCE Concentration (ug/L)	PCE Concentration (ug/L)	Other	Detection Limits (ug/L)
	8/4/87	21	25	Chloroform (2.0) Acetone (43)	1.0
	9/3/87	34	52	---	12.5
	10/5/87	24	43	Methylethylketone	2.5
	10/28/87	24	48	---	1.0
	12/1/87	20	38	---	0.5
	1/5/88	22	37	---	1.0
15	5/27/87	0.4	ND	---	0.1
	7/2/87	1.0	ND	---	0.1
	8/4/87	1.0	0.2	---	0.1
	9/3/87	1.0	ND	---	0.5
	10/5/87	0.9	ND	---	0.5
	10/28/87	1.0	0.2	---	0.1
	12/1/87	0.9	ND	---	0.1
	1/5/88	0.7	ND	---	0.1
	2/9/88	0.5	ND	---	0.5
18	6/3/87	ND	0.5	---	0.5
	7/2/87	0.9	0.4	---	0.1
	8/7/87	13	32	---	1.0
	9/3/87	37	58	---	12.5
	10/5/87	38	63	Methylethylketone	5.0
	10/28/87	33	10	Bromodichloromethane	1.0
	12/1/87	20	35	Bromodichloromethane Chloroform	0.5
	1/5/88[2]	6.0	13	Dibromochloromethane Chloroform Bromodichloromethane	1.0
	2/9/88	2.3	2.9	Toluene (0.5) Methylene Chloride (0.9)	0.5

1 No value reported means that the VOC was detectable, but not quantifiable
2 Sampling difficulties on this date make results questionable. Use data with qualification.
TCE = Trichloroethene
PCE = Tetrachloroethene
ND = Below Detection Limit
Source = City of Burbank (Analyzed by Montgomery Laboratories)

7.0 SUMMARY OF SITE RISKS

The purpose of the risk assessment is to evaluate the public health and environmental risks posed by the Burbank OU site. For the risk assessment evaluation, both a baseline risk assessment and a risk assessment for Alternative 5, phase 1 were conducted. This section describes the risk assessment process and results.

Baseline Risk Assessment: Analytical results from groundwater samples collected from City of Burbank production wells (PSD 6, 7, 10, 12, 15, and 18) between May 1987 and June 1988 form the groundwater database that were used in the Baseline Risk Assessment. In the Baseline Risk Assessments the current risks posed by domestic use of groundwater from the Burbank Well Field were estimated. The well field is currently not in use as a water supply. As a result, no receptors are currently being exposed.

A quantitative risk assessment was developed for two exposure source terms. One source term, "the potential average exposure," or the "most likely case" assumes that groundwater concentrations in the Burbank Well Field are at the geometric mean levels (averaged by well) and averaged across wells (arithmetic mean of geometric means). The other source term is a "plausible worse-case" and assumes that the receptor is exposed to the maximum contaminant level detected in any one well.

Assuming that groundwater from the well field is used for a lifetime, an individual receptor would be exposed to an excess cancer risk range (i.e., above the natural background risk) of approximately 2.0×10^{-4} to 1.7×10^{-3}. These risk values are at the highest range allowed by most regulatory agencies. For comparison, a lower excess risk range of 1.0×10^{-4} to 1.0×10^{-7}, with 10-6 departure, is used in CERCLA as a site remediation target.

The Baseline Risk Assessment concluded that, under the conditions postulated in the exposure assessment, the use of untreated groundwater from the Burbank Well Field as a domestic water supply for a lifetime would present an unacceptably high cancer risk. This conclusion assumes that the existing chemical analytical database sufficiently characterizes the groundwater contamination present.

It should be noted that the highest concentration levels found in the area were not used for the baseline risk assessment. In 1987, monitoring wells located near the Burbank well field showed concentrations as high as 18,000 ug/l for PCE and 3600 ug/l for TCE. Moreover, in February 1989, Lockheed Aeronautical Systems Company (LASC) was extracting groundwater with concentrations as high as 10,000 ppb for PCE and 2000 ppb for TCE at their

treatment facility located within the Burbank OU area. If these concentrations observed at LASC had been used, the baseline risk assessment would have shown even higher risk.

Alternative 5, phase 1 Risk Assessment: A risk assessment was performed for Alternative 5, phase 1 (extracting and treating 12,000 gpm with dual stage air stripping and vapor phase GAC). Both LASC monitoring well data and Burbank production well data were used. (See the Burbank OUFS report for tables and more information.) The contaminant mass was calculated from estimates of the concentrations in the groundwater (ug/M^3) which would likely be extracted and treated by the system. The expected chemical mass discharged to the atmosphere (g/sec) was calculated with respect to the three different air pollution control options. The expected chemical mass discharge was input to an atmospheric dispersion model which calculated concentrations of the chemicals in the air (ug/M^3). The concentration in the air was modeled to be spatially distributed in a two-mile radius surrounding the proposed air stripper location (see Figure 2). The population estimated to reside within two miles of the site in 1990 is 94,195. The 2010 population is expected to be slightly lower at 93,765.

In the health risk assessment, three air stripping air emission control options for Phase I of Alternative 5 were examined:

- o No air pollution control;
- o air emission controls leading to 90 % removal of VOCs; and
- o air emissions control leading to 99 % removal of VOCs.

Two types of carcinogenic risk calculations were performed. The first type is independent of population and is termed the maximally exposed individual (MEI). The MEI is the site of highest estimated potential exposure calculated. The MEI is independent of whether the site is inhabited. The total cancer risk to the MEI is examined by the South Coast Air Quality Management District (SCAQMD) to ascertain if a proposed project is expected to exceed a total risk of 1×10^{-6}. The air modeling results conclude that the MEI occurs at a distance 0.1 to 0.2 miles from the site. The total excess estimated cancer risk (to the MEI) for the three different air emission control options are as follows:

- o no air pollution control: 5.98×10^{-6}
- o 90 % removal of VOCs: 4.07×10^{-7}
- o 99 % removal of VOCs: 4.07×10^{-8}.

The second type of risk calculation presented was for a population. For the population risk, the individual risk level is multiplied by the size of the potentially exposed population. The air concentrations generated by the air model, expressed as the associated risk, are superimposed on the 1990 and year 2010 population data for a two-mile radius. The predicted total ex-

cess population cancer burden in a two-mile zone under conditions of the various air emission control options estimated for the 1990 population data are as follows:

- o No air pollution control: 0.04 cancers/population;
- o 90% removal of VOCs: 0.003 cancers/population; and
- o 99% removal of VOCS: 0.0003 cancers/population.

Thus, less than one excess cancer would be expected to occur in the population due to the emissions from the project.

Non-carcinogenic risks or the "Hazard Index" (HI) were calculated by an approach similar to that used for carcinogens. The rule of thumb is that HI should not exceed one. The HIs calculated are several orders of magnitude less than one, for any of the three air emission control options examined. As a result, the predicted exposure to receptors due to the non-carcinogens emitted from the air stripping towers were concluded to be insignificant from a human health perspective. (See the Burbank OUFS report for more detail on the risk assessment analaysis.)

Although uncontrolled emissions are near EPA's acceptable excess cancer risk number of 1×10^{-6}, it is unacceptable to not control emissions because of the poor air quality in the Burbank area. Moreover, emission controls would be needed to comply with requirements of the SCAQMD Regulation 13. See Section 9, Compliance with ARARs for a more detailed explanation of the ARARs and other information To Be Considered (TBC).

8.0 DESCRIPTION OF ALTERNATIVES

Many technologies were evaluated based on these criteria during the Feasibility Study. Treatment technologies that may be applicable to groundwater contaminated with volatile organic compounds, primarily TCE and PCE, were screened based on two criteria: (1) their ability to meet the remedial response objectives; and, (2) the applicability and feasibility of the technology to the site conditions.

After the initial screening, six alternatives were evaluated using the following Superfund guidance criteria: technical and adminstrative feasibility, capital costs, operation and maintenance costs, environmental impacts, protection of public health and the environment, compliance with federal and state regulations, and community and state acceptance.

The following is a list of the alternatives analyzed and compared during the FS and found in the Burbank OUFS Report:

- Alt 1 - No action
- Alt 2 - Extract from existing wells/Treat/Reinject and Reuse
- Alt 3 - Extract from new wells/Treat/Reinject and Reuse

Alt 4 - Extract from new and existing wells/Treat/ Spread and Reuse
Alt 5 - Extract from new and existing wells/ Treat/Reuse
Alt 6 - Extract from existing wells/Treat/Reuse.

The following descriptions give a summary of the alternative features. See the Burbank OUFS Report for more detail.

Alternative 1 - No Action Alternative

The No Action alternative served as a basis for comparing the other remedial alternatives. This alternative is evaluated to determine the risks that would be posed to public health and the environment if no action were taken to treat or contain the contamination. This alternative would include quarterly monitoring of the ten existing Burbank Public Service Department (PSD) wells. The monitoring program would help to ensure that groundwater would not be used when concentrations of VOCs exceed MCLs and SALs. It should be noted that currently all of the City of Burbank's wells have been shut down due to the VOC contamination and the City buys all its water from the Metropolitan Water District (MWD).

The Federal and State MCLs are relevant and appropriate in the aquifer.

Alternatives 2 - 6

Alternatives 2 through 6 include extraction of groundwater, treatment with air stripping with vapor phase GAC adsorption units, and discharge of the treated groundwater. The following is a description of the treatment system proposed in the Feasibility Study Report.

Air stripping (or aeration) is a method that removes VOCs from water by volatilization at the air-water interface. The pumped groundwater is run down through a vertical column which contains a packing medium. The medium provides surface area over which a countercurrent flow of air is introduced. The contaminant is transferred from the water to the air and thus removed from the water. The efficiency of the process is dependent on the nature of the contaminant, its influent concentration, the rate of air flow, and the available surface area afforded by the packing material. For TCE and PCE, removal efficiencies can exceed 99 percent. Aeration is a proven method and is commonly used to treat groundwater.

Dual stage air stripping uses two airstripping towers in series to remove contaminants from water. Treated water from the base of the first air stripping tower is pumped to the top of the second air stripping tower and aerated a second time. Dual stage

air stripping is preferable to single stage air stripping because the contaminated water here is expected to have high levels of TCE and PCE.

Air stripping has two drawbacks with respect to public health and the environment. First, there is the possibility of low-level, longterm cancer risk to the local population due to the release of volatilized contaminants into the air. Secondly, this release of contaminants also contributes to air quality degradation which in turn affects human health and the environment.

Therefore if dual stage air strippers are used as the treatment technology, vapor phase GAC adsorption units will be installed to remove 90 - 99% of the VOCs discharged to the air. Air emission controls would minimize the negative impact on public health and the environment. (See Section 9, Compliance with ARARs, Community Acceptance and State Acceptance, for more detailed support documentation.)

It has been determined that pure product in the form of TCE and PCE (U210 and U228) are contained in the groundwater making RCRA Section 261.33 applicable for this action. The groundwater also contains spent TCE and PCE that was used in degreasing. The listing in 40 C.F.R. Subpart D Section 261.31 that pertains to spent halogenated solvents used in degreasing is F001. This listing requires knowledge of the percent solvent by volume before use. This information is unavailable for the Burbank OU making the RCRA F001 listing not applicable but relevant and appropriate for this action.

In Alternatives 2-6, the spent carbon is considered a RCRA waste or it is a mixture of the solid waste carbon and the RCRA listed wastes F001, U210, and U228 (40 C.F.R. Section 261.3(a)(2)(iv)). Therefore the carbon must satisfy the requirements of 40 C.F.R. Part 263 to be shipped off site for regeneration.

The Federal and State MCLs are relevant and appropriate in the aquifer. Moreover, the MCLs are the ARARs that will be met in the treated water. This water will be either reinjected, spread, or reused as a drinking water source.

Alternative 2 - Extract from Existing Wells, Treat, Reinject and Reuse

This alternative includes pumping 16,000 gpm of water from eight Burbank PSD wells (located west of the highest known TCE and PCE contamination) to an existing equalization basin, which would be retrofitted, to provide a uniform feed to the treatment facility. The water would be treated by eight sets of dual stage air strippers (AS) with vapor phase GAC adsorption units for the off-gas.

Treatment efficiency could produce effluent water of a quality that meets or exceeds all federal and state applicable or relevant and appropriate requirements (ARARs). Four thousand

gallons per minute (4000 gpm) of the treated water would be introduced into Burbank's existing distribution system for reuse. The remainder of the treated water would be injected into the aquifer downgradient of the VOC plume to reduce VOC movement. The reinjection would help enhance plume containment and aquifer restoration. The treated water would be delivered to the injection field by a new pipeline to be constructed along Victory Boulevard.

After 20 years of extraction, concentrations of TCE and PCE in the groundwater would still exceed MCLs. Since the plume migration would be diverted from its current path towards Burbank's production wells, the PSD wells could produce groundwater with higher concentrations of PCE and TCE.

This alternative would be expected to reduce TCE concentrations in the aquifer from 3,200 ppb to 590 ppb in 20 years. This alternative would partially arrest the migration of the TCE and PCE plumes.

Six monitoring wells would be installed to monitor the performance of the system.

Since the groundwater has been determined to contain RCRA listed wastes, it must satisfy the requirements of RCRA Land Disposal Restrictions (LDR), 40 C.F.R. Section 268. The LDR defines the requirements for reinjection or land disposal. Therefore, the water must be treated to meet the Best Demonstrated Available Treatment Technology (BDAT) standards for spent PCE and TCE which are .079 ppm PCE and .062 ppm TCE (40 C.F.R. Part 268.42). Approval for reinjection would also be needed from the California Regional Water Quality Control Board - Los Angeles Region.

Approval for reuse would be required by California Department of Health Services (DHS) and the City of Burbank. EPA, DHS, and the City have already begun discussions over the possibiltiy of the City's reuse of the water.

There are some technical concerns over the operation of injection wells due to the uncertainities of the contamination plumes and operational effectiveness of injection wells.

Alternative 3 - Extract from New Wells, Treat, Reinject and Reuse

This alternative is similar to Alternative 2 except that ten new extraction wells would be constructed to extract the 16,000 gpm of contaminated groundwater. Although the cost of installing extraction wells would be greater than pumping the existing wells, the new wells would be optimally located to maximize the removal of contaminants from the groundwater. The treatment, disposal, and monitoring technologies would be the same as those employed in Alternative 2.

This alternative is estimated to reduce TCE concentrations from 3200 ppb to 81 ppb in the first 10 years, and more thereafter. It is estimated it would reduce PCE concentrations from over 4000 ppb to 30 ppb in 20 years. Alternative 3 would be successful in halting plume migration and in mitigating the VOC contamination (contributing to aquifer restoration).

Since the groundwater has been determined to contain RCRA listed wastes, it must satisfy the requirements of RCRA Land Disposal Restrictions (LDR), 40 C.F.R. Section 268. The LDR defines the requirements for reinjection or land disposal. Therefore, the water must be treated to meet the Best Demonstrated Available Treatment Technology (BDAT) standards for spent PCE and TCE which are .079 ppm PCE and .062 ppm TCE (40 C.F.R. Part 268.42). Approval for reinjection would also be needed from the California Regional Water Quality Control Board - Los Angeles Region.

Approval for reuse would be required by California Department of Health Services (DHS) and the City of Burbank. EPA, DHS, and the City have already begun discussions over the possibility of the City's reuse of the water.

There would be significant gains in aquifer restoration and control of the plume migration with this alternative.

Alternative 4 - Extract from New and Existing Wells/ Treat/Spread and Reuse

The major features of this alternative include extraction of 16,000 gpm from 10 new wells and 6,000 gpm from 5 existing wells, treatment with either dual stage or single stage AS with vapor phase GAC, reuse of 4000 gpm by the City of Burbank and discharge of 18,000 gpm to spreading grounds for recharge. Six monitoring wells would be installed to assess the effectiveness of the system.

Alternative 4 was developed to compare the option of groundwater recharge by spreading with groundwater recharge by injection. This comparison addresses uncertainties associated with the capacity, operation and maintenance of injection wells used in Alternatives 2 and 3, and the overall uncertainties associated with the characterization of plume contamination.

Because the treated water would not be reinjected into the aquifer downgradient of the VOC plume as in Alternatives 2 and 3, the extraction rate of contaminated groundwater would have to be higher to achieve a similar gradient reversal. In this alternative, the water from ten new extraction wells and five existing Burbank PSD wells would be pumped to an existing equalization basin, which would be retrofitted, to deliver two treatment streams to the treatment facility. The water would be treated by six sets of dual stage carbon air filtering units and five single-stage air strippers with carbon air filtering units,

depending on the amount of water flowing into the system. Each treatment module would be designed to treat the water and air to meet the ARARS and TBCs (see Section 9, Compliance with ARARs).

Since the groundwater has been determined to contain the RCRA listed wastes F001, U210 and U228, it must be treated to "no longer contain" these listed wastes before being spread for recharge. (See Memorandum from Marcia E. Williams, Office of Solid Waste Director, to Patrick Tobin, Waste Management Division Director, regarding RCRA Regulatory Status of Contaminated Ground Water, November 13, 1986.)

Approval for reuse would be required by California Department of Health Services (DHS) and the City of Burbank. EPA, DHS, and the City have already begun discussions over the possibility of the City's reuse of the water.

This alternative is estimated to reduce TCE concentrations from 3,200 ppb to 122 ppb in 10 years and more thereafter. PCE concentrations are estimated to reduce from over 4000 ppb to 39 ppb in 20 years. There would be significant gains in aquifer restoration and control of the plume migration with this alternative.

The OUFS Report determined that spreading basins may be more reliable than injection wells.

Alternative 5 - Extract from New and Existing Wells/ Treat/Reuse

This alternative uses the same extraction, treatment, and monitoring technologies as those specified in Alternative 4. This alternative is unique in that all of the treated water would be used for potable water supply. The treated water would be at or below the federal and state MCLs and SALs (ARARs).

A portion of the treated water would be introduced into the Burbank PSD's existing distribution system for reuse, which would meet the City of Burbank's current average daily demand (12,000 gpm). The remainder of the treated water (10,000 gpm) could be introduced into the Metropolitan Water District (MWD) distribution lines.

Under this arrangement, the parties involved would have to enter into agreements for this exchange because the San Fernando Valley Groundwater Basin is an adjudicated basin and the net extraction of groundwater in this alternative would exceed the Burbank PSD's pumping rights. Also, MWD does not have any pumping rights. However, instutitional arrangements could be worked out between the LADWP and the other parties, since LADWP does have pumping rights. Preliminary discussions with the City of Burbank and

LADWP have been initiated and the parties are in agreement that adminstrative agreements could be arranged (for the reuse of 12,000 gpm).

Alternative 5 could be implemented in two phases. Phase 1 would consist of extracting 12,000 gpm from new wells, treating with dual stage AS with vapor phase GAC, and reusing the treated water by the City of Burbank. Phase 2 could consist of extracting the remainder 10,000 gpm (total 22,000 gpm) from new and existing wells, treating with AS with vapor phase GAC adsorption units and reusing by MWD customers.

It is estimated that Phase 1 would control most of the plume migration (100 ug/l TCE plume boundary and 5 ug/l PCE plume boundary) while aiding with aquifer restoration and the total project (phase 1 and phase 2) would reduce concentrations to the same levels as Alternative 4.

Due to the large size of the total project, and the uncertainities associated with the modeling and extent of contamination, EPA believed it was important to look at phasing Alternative 5; thereby, initiating the necessary remediation, while conducting further evaluations to refine technical features in order to maximize the effectiveness of the total project.

Alternative 6 - Extract from Existing Wells/Treat/Reuse

The technical features of this alternative include extracting 4000 gpm from two existing Burbank PSD wells, treating the water with dual stage AS with vapor phase GAC adsorption units, and reusing the treated water by the City of Burbank.

This alternative would not restrict the plume's migration, nor would it significantly aid in aquifer restoration.

9.0 SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

This section provides a summary of the advantages and disadvatages of each of the alternatives' performance under the nine evaluation criteria.

Table 3 provides a summary of the analyses of alternatives. The alternatives were evaluated based on the following criteria for conducting feasibility studies:

(1) overall protection of human health and the environment,
(2) short term effectiveness in protecting human health and the environment,
(3) long-term effectiveness and permanence in protecting human health and the environment,
(4) compliance with ARARs,

Table 3
Summary and Costs of Alternatives ***

	1	2	3	4	5	6
Alternatives	No action includes the monitoring of 8 existing wells.	Extract 16,000 gpm from 8 existing wells. Treat with dual stage AS with vapor phase GAC. Dispose by injection in 10 new wells and reuse of 4,000 gpm. Injection wells placed to enhance containment.	Extract 16,000 gpm from 10 new wells. Treatment and disposal same as Alternative 2. Phased approach: Phase 1 75% capacity (12,000 gpm); and Phase 2, 25% additional capacity. (4,000 gpm)	Extract 16,000 gpm from 10 new wells and 6,000 gpm from 5 existing wells. Treatment same as Alternative 2 for Phases 1 and 2. Phase 2 treatment single stage AS. Disposal at spreading grounds and reuse of 4,000 gpm. Phased approach same as Alternative 3.	Extract and treat same as Alternative 4. Reuse of 22,000 gpm of treated water. Phased approach: Phase 1, 55% capacity (12,000 gpm) and Phase 2, 45% capacity (10,000 gpm)	Extract 4,000 gpm from 2 existing wells. Treat with dual stage AS with vapor phase GAC. Reuse 4,000 gpm of treated water.
Effectiveness & Permanence	Continued risk of groundwater contamination would be present. Reliance would be solely on institutional controls to prevent exposure.	After 20 years of extraction, concentrations of TCE in the groundwater would still exceed MCLs. Since plume migration would be diverted from its current path towards Burbank's production wells, wells could be contaminated to higher levels.	After 10 years of extraction, concentrations of TCE in the groundwater would still exceed MCLs. However, concentrations would be greatly reduced from those achieved in Alternative 2. Plume migration would be controlled as long as pumping continued or the aquifer was remediated.	Less effective than Alternative 3 but more effective than Alternative 2.	Same as Alternative 4.	Same as Alternative 2.
Reduction of Toxicity, Mobility, or Volume	No reduction toxicity, mobility, or volume since no treatment would be used.	Estimated to reduce TCE concentrations from 3,200 ug/l to 590 ug/l after 20 years. Continued contamination migration would occur but would be redirected towards the extraction wells.	Estimated to reduce TCE concentrations from 3,200 ug/l to 81 ug/l after 10 years. Plume migration would be effectively controlled and further aquifer contamination would not be expected.	Estimated to reduce TCE concentrations from 3,200 ug/l to 122 ug/l after 10 years. Plume migration would be less effectively controlled than in Alternative 3, but more more effectively controlled than in Alternative 2.	Same as Alternative 4.	Same as Alternative 1 except additional decrease of contaminant concentrations would be achieved by groundwater extractions.
Compliance With ARARS	Would not meet MCLs and state action levels.	Water discharged from the treatment system would meet MCLs and state action levels. Emissions from AS would be controlled by GAC.	Same as Alternative 2.	Same as Alternative 2.	Same as Alternative 2.	Same as Alternative 2.
Overall Protection of Human Health & Environment	Institutional controls would control risk of ingestion of contaminated groundwater. Environmental degradation would increase as groundwater contamination spread.	Institutional controls would control risk of ingestion of contaminated groundwater and monitor effectiveness of the treatment system. Environmental degradation could increase since a zone in the aquifer with apparently low contaminant concentrations could be contaminated to higher levels.	Institutional controls would be same as Alternative 2. Environmental degradation could be greatly reduced since the plume of groundwater contamination would be reduced in conentration and extent.	Institutional controls would be same as Alternative 2. Environmental degradation could be more effectively controlled than Alternative 2 but less effectively than Alternative 3.	Same as Alternative 4.	Same as Alternative 2.
Implementability	Monitoring wells would be easy to construct. Spread of the groundwater plume could make remediation more difficult in the future.	Monitoring would be needed to assess effectiveness of groundwater extraction. AS with vapor phase GAC is a proven technology. Approval for hookup would be needed from municipal authority. Operational effectiveness of injection wells may be questionable.	Same as Alternative 2.	Same as Alternative 2 except spreading basins could be more reliable than the injection wells.	Technical implementability would be the same as Alternative 2 for extraction and treatment. Administrative agreements would need to be developed between the City of Burbank, MWD, and LADWP to accomodate the exchange of water beyond the City of Burbank's water rights.	Same as Alternative 2 without injection wells
Cost ($1,000)					Phase 1 / Phase 2 / Total**	
Total Present Worth* — O & M Capital	0	36,600	43,400	42,300	25,100 / 7,000 / 32,100	Assumed to be 25% of the cost of Alternative 2, or $20,450.
Total Present Worth* — O & M Total	60	45,200	44,700	52,900	43,900 / 10,300 / 54,200	
Total Present Worth*	500	81,900	88,100	95,200	69,000 / 17,300 / 86,300	

* Present worth evaluation assumes 10 percent annual interest rate and 20 years for the project life.
** Total cost of Phase 1 and Phase 2.
***As presented in the Final Draft Operable Unit Feasibility Study Report (October 1988)

(5) reduction of toxicity, mobility, and volume of contaminants,
(6) technical and administrative feasibility of implementation,
(7) state acceptance,
(8) community acceptance, and
(9) capital and operation and maintenance costs.

The nine criteria and the relative performance of the alternatives in relation to each criterion and each other is summarized below.

Overall Protection of Human Health and the Environment

Alternatives 3, 4, and 5 provide the best protection to human health and the environment. Environmental degradation would be reduced since the plume of groundwater contamination would be reduced in concentration and extent. Institutional controls would control the risk of ingestion of contaminated groundwater, since only treated water would be served. Drinking water would be provided via surface water from the MWD and/or treated groundwater from the stripping units.

Alternatives 1, 2 and 6 are not as protective of the environment because environmental degradation would increase over time. Alternative 1, the no action alternative, would allow the contamination to continue spreading. Although alternatives 2 and 6 extract and treat some of the contaminated groundwater, the extraction wells would not be strategically located to capture the higher groundwater contaminant concentrations. Institutional controls in Alternatives 1, 2, and 6 for the protection of drinking water would be the same as in Alternatives 3, 4, and 5.

Compliance with ARARS

This section will outline the Applicable or Relevant and Appropriate Requirements (ARARs) and other information that EPA considered for this site. Then it will compare the alternatives with one another regarding these ARARs and To Be Considereds (TBCs).

There are ARARs and TBCs that apply to both the water and air for this response action. These can be separated into chemical specific and primary action specific ARARs and TBCs.

Water ARARs and TBCs: There are chemical specific ARARs and TBCs for water which will be described here. First, the ARARs for the water are the Safe Drinking Water Act Maximum Contaminant Levels (MCLs). In accordance with the EPA "Interim Guidance on Compliance with Applicable or Relevant and Appropriate Requirements (OSWER Directive 9234.0-05)," the MCLs are considered the chemical-specific ARARs because they are the enforceable drinking water standards. They are required to be set as close to the Maximium Contaminant Level Goals (MCLGs) as is feasible, taking

into consideration the best available technology, treatment techniques and other factors (including cost). They are also protective of public health to within EPA's acceptable carcinogen risk range of 10^{-4} to 10^{-7}. The MCL of particular importance for this response action is the MCL of 5 ppb for TCE.

MCLGs, which are based only upon health criteria, are not directly applicable as chemical-specific requirements because they are not enforceable standards.

EPA also considered the California DHS's action levels for VOCs, a few of which are more stringent than the MCLs or for which no MCL has been established. While the DHS action levels are not promulgated standards and are not, therefore, ARARs, they have been taken into consideration during development of remedial action alternatives as allowed for in the National Contigency Plan (NCP). In addition, DHS has recently proposed MCLs for a number of VOCs. Of particular significance, the proposed MCL for PCE is 5 ppb, which is just slightly higher than the current DHS action level of 4 ppb.

Table 4 lists the federal MCLs, MCLGs and SALs for the primary contaminants detected in the Burbank Operable Unit area. The remedial action selected will meet the federal MCL for TCE (< 5ppb) and the SAL for PCE (< 4 ppb).

It has been determined that pure product in the form of TCE and PCE (U210 and U228) are contained in the groundwater making RCRA Section 261.33 applicable for this action. The groundwater also contains spent TCE and PCE that was used in degreasing. The listing in 40 C.F.R. Subpart D Section 261.31 that pertains to spent halogenated solvents used in degreasing is F001. This listing requires knowledge of the percent solvent by volume before use. This information is unavailable for the Burbank OU making the RCRA F001 listing not applicable but relevant and appropriate for this action.

Air ARARs and TBCs: There are primary action-specific ARARs and TBCs for the air discharge which will affect this response action. In California, the authority to regulate stationary sources of emissions has been delegated to local air quality management districts. The Burbank OU is located in the South Coast Air Quality Management District (SCAQMD). Therefore, SCAQMD regulations constitute generally applicable, promulgated state requirements under state environmental law, as set forth in section 121(d) of the Superfund Amendments and Reauthorization Act of 1986 (SARA).

EPA considered SCAQMD Regulation XIII (comprising Rules 1300 to 1313), which requires that stationary sources of air emissions meet best available control technology (BACT) standards. Regulation 13 states that new stationary sources of air contaminants in the air basin that emit reactive organic gases must employ BACT air pollution control devices. These BACT devices are defined as

Table 4
MCLs, MCLGs and State Action Levels for
Primary Organic Contaminants Detected in the
Groundwater Beneath the Burbank Operable Unit Area

	Federal Maximum Contaminant Level (MCL)[a] (ug/l)	Federal Maximum Contaminant Level Goal (MCLG)[a] (ug/l)	State Action Level (SAL)[b] (ug/l)
Trichloroethene (TCE)	5	zero	5
Perchloroethene (PCE)	-	-	4[c]
Carbon tetrachloride (CTC)	5	zero	5[c]
Chloroform	100[d]	-	-

Notes: '-' Indicates that there is not a set level.

[a] MCL and MCLG are set by the United States Environmental Protection Agency.

[b] SALs are set by the California Department of Health Services (DHS)

[c] DHS has recently proposed establishing State MCLs for PCE and CTC of 5 and 0.5 ug/l, respectively.

[d] Value reported is total trihalomethanes (chloroform, dibromochloromethane, bromodichloromethane, and bromoform).

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"the most stringent emission...control technique which... is found... to be technologically feasible and cost effective...." (See the Administrative Record for the Burbank OU for a copy of Regulation XIII.) It is estimated that, if there are no emissions controls, the air strippers contemplated for the Burbank OU would emit over 168 pounds per day of reactive organic gases to the atmosphere. For air strippers, SCAQMD considers vapor phase GAC (with 90 to 99% removal efficiency) devices to be BACT.

EPA also considered SCAQMD Rules 1401 and 1167 as "other information to be considered," pursuant to the NCP.

Proposed Rule 1401 - New Source Review of Carcinogenic Air Contaminants - specifies limits for individual cancer risk and excess cancer cases from new stationary sources which emit carcinogenic air contaminants. The rule requires BACT for toxic air discharge for new stationary sources where a lifetime maximum individual cancer risk of one in one million or greater is estimated to occur. TCE is a listed carcinogenic air contaminant. Results from the public health assessment show that TCE emissions after treatment on the vapor phase would meet Rule 1401's requirements.

Rule 1167's purpose is to control VOCs as precursor emissions to ozone formation in the South Coast Air Basin. The South Coast Air Basin is currently in nonattainment status with respect to the National Ambient Air Quality Standards (NAAQS) for ozone, and VOCs are known precursors to ozone formation. Rule 1167 is designed to reduce VOC emissions from new and existing air stripping equipment used for treatment of contaminated water. The rule requires that all air stripping facilities treating contaminated groundwater that emit more than one pound per day of total VOC emissions install air emission controls capable of reducing air emissions by 90%.

Although Rule 1167 was stayed by the California Superior Court until an Environmental Impact Report is completed, it is considered in the remedy selection process as a TBC since SCAQMD fully intends to meet the requirements set by the court judgment and proceed toward adoption of this rule as a promulgated, legally enforceable, generally applicable requirement in the near future.

Installation of an air stripping system with air emission controls is more protective of the environment in that it will reduce ozone precursor emissions to the atmosphere by 90 to 99% and will support efforts by SCAQMD to reach attainment status for ozone in the South Coast Air Basin.

Comparision of Alternatives: Alternative 1, the no action alternative, would meet the drinking water ARARs because institutional controls would continue to assure that the public was provided

with drinking water that meets the federal and state MCLs and SALs. Also since no system would be in place, the SCAQMD's rules would not be violated.
Water treated and discharged from alternatives 2 - 6 would meet the federal and state MCLs and SALs before reuse, injection or spreading. Air stripping systems would have vapor phase GAC adsorption units to control air emissions to 90 - 99% removal efficiency to meet the South Coast Air Quality Management District's rules. Steam stripping would recover the VOCs for recycling so no air emission control system would be necessary.

However, Alternatives 1, 2, and 6 do not do as much as Alternatives 3, 4, and 5 to meet federal and state MCLs in the aquifer. Alternatives 3, 4, and 5 more effectively aid in restoring the aquifer (to VOC concentrations at or below the MCLs and SALs) and controlling the plume migration.

By meeting the federal and state MCLs and SALs before reinjection, Alternatives 2 and 3 will satisfy the RCRA Land Disposal Restrictions requirements. By meeting the federal MCLs and SALs, the groundwater will no longer contain the listed wastes when it is spread for recharge in Alternative 4.

For Alternatives 1 - 6, the MCLs are relevant and appropriate in the aquifer. Upon completion of the final remedial action for the site, this ARAR will be satisfied.

Long-term Effectiveness and Permanence

Alternatives 3,4, and 5 would have the greatest ability to maintain reliable protection of human health and the environment over time. After 20 years of extraction, concentrations of TCE and PCE in the groundwater are expected to still exceed the federal MCLs and SALs, however they would be greatly reduced as discussed in the previous section. Plume migration would be controlled and aquifer restoration would continue as long as the system kept operating.

Alternatives 1,2, and 6 do not offer long term effectiveness or permanence. In fact, these alternatives might allow contamination to spread to clean zones within the SFVB.

Alternative 1 relies solely on institutional controls to prevent exposure to the contaminanted groundwater. The current water supply from surface water via the MWD may not always be available in the future because of peiodic drought conditions and State and Federal water rights issues.

Reduction of Toxicity, Mobility, or Volume

Alternatives 3, 4, and 5 offer the most reduction of toxicity, mobility, and/or volume of the contamination. The most contaminated groundwater in the Burbank OU area would be extracted and treated to remove the VOCs from the groundwater, thus the VOC

contamination in the groundwater would be greatly reduced in toxicity, volume and mobility. Moreover, the air emission control units would reduce the mobility of the VOCs to the air.

Alternative 1 would have no reduction in toxicity, mobility, or volume since no treatment is employed.

Alternative 2 would reduce the volume of contamination by extracting and treating 16,000 gpm. Alternative 6 would reduce the volume of contamination by extracting and treating 4000 gpm. However, the existing wells used for alternatives 2 and 6 would not be stratigically located to control migration or capture the contamination. Therefore, continued contaminant migration would occur and a lesser amount of contamination would be captured then for alternatives 3, 4, and 5.

Short Term Effectiveness

For alternatives 3, 4, and 5, no adverse impacts would be expected during the construction and implementation period or remediation. Drinking water supplies would be provided from treated groundwater and/or surface water from the MWD during the interim before construction complete and during remediation. Institutional controls would assure that all drinking water would meet drinking water standards. The plume migration would be effectively controlled with these alternatives and aquifer restoration would be initiated in this area.

Alternative 1, the no action alternative, would not be effective in controlling migration or aquifer restoration. It would allow the contaminanted groundwater to spread to uncontaminated downgradient wells. There would be sole reliance on institutional controls to prevent exposure via drinking water ingestion.

Alternative 2 and 6 would be more effective than alternative 1. There would be less reliance on institutional controls for drinking water, since treated groundwater that meets MCLs and SALs would be served, as a portion of the total drinking water supply for the affected areas. However, these alternatives would not be as effective in controlling plume migration and in aquifer restoration as alternatives 3, 4, and 5.

Implementability

Alternatives 1 - 6 would all be technically implementable. However, Alternative 5 appears the easiest to implement with the current information, due to the practical uncertainities associated with injection and spreading and the technical uncertainties associated with plume location and migration.

Construction of monitoring wells for all alternatives is straight forward, using well known technology. There are many monitoring wells in the SFVB.

Alternatives 2 - 6 would employ air stripping with vapor phase GAC adsorption units (or steam stripping*) which is a proven treatment technology and relatively easy to implement. Administrative agreements would be needed for the use of treated groundwater. Approval for hookup to the City of Burbank would also need to be arranged prior to distribution. Preliminary discussions have already taken place and no significant problems have been identified.

Alternative 5 would require agreements between the City of Burbank, LA DWP, and MWD to accomodate the exchange of water beyond the City of Burbank's extraction credits. However, preliminary discussions between EPA and the affected parties regarding the reuse of the water have shown that the agreements could be arranged.

The use of injection wells in alternatives 2 and 3 could be difficult to implement technically due to operational problems encountered with injection wells and the unknowns associated with extent of contamination. Further spread of contamination could occur if the injection wells were improperly placed.

Spreading in Alternative 4 could be more reliable than the injection wells. However, there are also uncertainities associated with possible contamination in the area of the spreading grounds. An additional load from discharging the water by spreading could cause further contamination of the area by enhancing movement of the contaminants in the soil and/or groundwater.

Alternatives 1 and 6 would allow the contamination to spread and thus make remediation more difficult in the future.

Cost

Alternative 1 would be the least expensive with an expected present worth value of $500,000. (Present worth evaluations assume 10% annual interest rate and 20 years for the project life.)

Alternative 2 has an estimated capital cost of $36.6 million and total O&M of $45.2 million. The expected present total worth value is $81.8 million.

Alternative 3 has an estimated capital cost of $43.4 million and total O&M of $44.7 million. The expected present total worth value is $88.1 million.

Alternative 4 has an estimated capital cost of $42.3 million and total O&M of $52.9 million. The expected present total worth value is $95.2 million.

* Steam stripping is discussed in Section 10, Documentation of Significant Changes.

Alternative 5 has an estimated capital cost of $32.1 million ($25.1 M for phase 1 and $7.0 M for phase 2) and total O&M of $54.2 million ($43.9 M for phase 1 and $10.3 M for phase 2). The expected present worth value is $86.3 million ($69.0 M for phase 1 and $17.3 M for phase 2).

Alternative 6 is assumed to be 25% of the cost of Alternative 2, or $20.5 million.

The cost summaries can be found in greater detail in the Burbank OUFS Report.

Community Acceptance

Alternatives 3, 4, and 5 received the most community acceptance. The community generally wants the aquifer restored for beneficial use and the plume migration halted as soon as possible.

Community Workgroup members expressed some concern over reinjection and spreading due to the uncertainties associated with the extent of contamination. Their concern was that reinjection or spreading could contribute to the spread of contamination if the wells or spreading areas were improperly located. Therefore Alternative 5, the water reuse option, was most attractive to the community workgroup.

The community feels strongly that air emission controls must be employed due to the poor air quality in the Burbank area. EPA addresses this concern with the requirement that vapor phase GAC adsorption units would be installed if air stripping is used.

The Response Summary (attached) addresses more specific concerns and comments raised during the public comment period.

State Acceptance

Like the community, the State (DHS and RWQCB) wants aquifer restoration and control of the plume migration initiated as soon as possible.

They prefer Alternative 5 because they (like the community) have concerns with regards to the reinjection and spreading options associated with Alternatives 3 and 4. (See previous discussion.)

They also believe it is important to have air emission controls on the air stippers. Moreover, the SCAQMD insists that if aeration is used to treat the water that vapor phase GAC adsorption units (or comparable BACT) be installed.

California DHS has concurred with the Burbank OU remedy selection.

10. Documentation of Significant Changes

The Proposed Plan was released for public comment in October 1988. The Proposed Plan identified Alternative 5, phase 1, extraction, treatment, and reuse, as the preferred alternative.

Dual stage air strippers with vapor phase GAC adsorption units were chosen as the preferred treatment technology. During the public comment period, a potentially responsible party, Lockheed Aeronautical Systems Company (LASC), presented EPA with a similar treatment technology - steam stripping, more specifically, the AquaDetox system.

In the Burbank OUFS Report, conventional steam stripping was screened out because TCE and PCE are highly volatile compounds which are easily removed from water without input of heat. Furthermore, the expected concentrations of TCE and PCE were not high enough to warrant the added energy input. Therefore, steam stripping was not considered cost effective and was not considered further in the OUFS.

Steam stripping with the AquaDetox system was also screened out during the Burbank OUFS on the basis that adequate experience did not exist either for AquaDetox systems without external steam supply or for the effluent to be used as drinking water.

The AquaDetox process is a proprietary and patented steam stripping technology developed by AWD Technologies, Inc., which uses steam stripping under moderate or deep vacuum pressure. While conventional steam stripping was considered not applicable because of its higher cost than air stripping, the AquaDetox system, may be cost-effective due to the lower energy requirements. Other claimed advantages of the system are : (1) the VOCs can be recovered for recycling instead of discharged to the air or carbon, and (2) it is a closed loop system and therefore there is minimal VOC discharge to the air (< 1 lb/day, given estimated groundwater VOC concentrations).

The AquaDetox system under moderate vacuum pressure was selected by LASC for groundwater treatment at a site within the Burbank OU area. This 1200 gpm extraction and treatment facility began operation in January 1989 and should provide performance data relative to the use of this technology in the removal of the VOCs.

Information on the influent from the LASC AquaDetox extraction and treatment system is showing higher concentration levels for TCE and PCE than estimated in the Burbank OUFS Report. LASC's treatment facility is extracting groundwater with concentrations up to 12,000 ppb PCE and TCE combined (as of February 1989). Therefore steam stripping may be more applicable (e.g. economical) than originally thought due to the higher concentrations and added stripping efficiency of steam stripping.

Since air and steam stripping fall under the same class of treatment - stripping - either technology can be employed to meet the performance standards, therefore achieving the stated Burbank Operable Unit objectives.

Air stripping was used during the discussion of the description of alternatives and comparision analysis. However, the selected remedy will be either air or steam stripping, as long as the steam stripping meets the performance standards and is as effective as the air stripping in meeting the evaluation criteria. This allows flexibility during the remedial design to procure the most cost-effective unit that also protects human health and the environment.

11.0 THE SELECTED REMEDY

Alternative 5, phase 1, using either steam or air stripping for treatment, is the selected remedy for the Burbank Operable Unit. The remedy includes extraction of contaminated groundwater, treatment by stripping, and reuse of the water by the City of Burbank for drinking water. If air stripping is chosen during the remedial design, vapor phase GAC adsorption units will be needed to comply with the ARARs and TBCs.

The extraction system will be designed to capture groundwater containing 100 ppb or greater of TCE and 5 ppb or greater of PCE. The extraction flow rate is currently projected to be 12,000 gpm.

The Federal and State MCLs are relevant and appropriate in the aquifer. Upon the completion of the final remedial action for the site, this ARAR will be satisfied.

Although it was estimated in the Burbank OUFS report that extraction at a rate of 16,000 gpm coupled with injection wells for a period of 20 years was necessary to fully remediate the Burbank OU area (i.e. removing groundwater until that left contained contaminants to concentration levels at or below MCLs and SALs), the decision to pump and treat 12,000 gpm was determined to be the most appropriate given the amount of technical information currently available. More information will be gathered during the basinwide RI, North Hollywood OU remedy operation, LASC's extraction and treatment system, Burbank OU remedial design, and the operation of the Burbank OU treatment system to determine whether more extraction is necessary to continue aquifer restoration and controlling the migration of the plume. If additional extraction is determined necessary, EPA would again go out for public comment with a Proposed Plan before signing another Record of Decision.

Extraction wells will be strategically placed (both laterally and vertically) to maximize the effectiveness of the system. The locations presented in the OU may be modified if warranted by new data. Stripping is the chosen treatment. LASC is conducting a

treatability study with its AquaDetox system. This will help determine whether steam stripping will be used for the OU remedy. Air stripping with vapor phase GAC adsorption units will be used unless steam stripping is shown to meet or exceed the treatment advantages of air stripping with vapor phase GAC. EPA may also decide to use the two technologies together if that would maximize efficiency.

The VOCs - particularly the primary contaminants, TCE and PCE - in the groundwater must be removed from the groundwater such that treatment plant effluent concentrations are below the Federal MCLs and SALs (TCE - 5 ppb and PCE - 4 ppb). The water must also meet all drinking water standards. This may require further treatment like chloramination for disinfection purposes, or reverse osmosis or ion exchange for nitrates.

The treated water will be fed directly into Burbank's distribution system for reuse by the City's residents.

Monitoring wells will be installed downgradient to monitor the performance of the system.

The extraction of contaminated groundwater from the Burbank OU area, treatment of groundwater to drinking water standards, and distribution of the water to the Burbank residents is the most cost effective and technically sound means of meeting the OU objectives.

The selected remedy permanently and significantly reduces the toxicity, mobility, and volume of hazardous substances with respect to their presence in the groundwater -- the contaminants are removed from the groundwater, thereby reducing contaminant migration in the vicinity of the Burbank OU area.

Stripping will result in a small increase in the toxicity, mobility, and volume of hazardous substances with respect to their presence in the air. However, the use of steam stripping recovers most of the VOCs for recycling. If dual stage air stripping is used for treatment, vapor phase GAC adsorption units will be installed to minimize the amount of VOCs discharged to the air.

The air emissions are estimated to add a minimal risk to the project via airborne contaminants, because the air emission controls will remove 90 - 99% of the contaminants before they are discharged to the air. The addition of vapor phase GAC adsorption units meets the ARARs and TBCs discussed in Section 9, Compliance of ARARs.

The spent carbon from the vapor phase GAC adsorption system is considered a RCRA waste or it is a mixture of the solid waste carbon and the RCRA listed wastes F001, U210, and U228 (40 C.F.R.

Section 261.3(a)(2)(iv)). Therefore the carbon must satisfy the requirements of 40 C.F.R. Part 263 to be shipped off site for regeneration.

The pump and treat system will operate for an estimated 20 years. Groundwater monitoring and groundwater level measuring will be conducted as part of the remedy to track contaminant concentrations in the Burbank OU area, to monitor the performance of the treatment system and to determine the efficiency of the system in restoring the aquifer. The system will be evaluated periodically to determine the effeciency and necessity of the remediation in achieving the stated goals. The reviews will allow for modification in the system as required.

For reference, the estimated cost of the selected remedy with the use of dual stage air stripping with vapor phase GAC adsorption units is $69M (see Table 5). LASC's Remedial Action Alternative for the Burbank Well Field Operable Unit gives a cost estimate of $50.1 Million net present value for the Burbank OU remedy using the AquaDetox sytem instead of the AS with vapor phase GAC adsorption units. Although LASC's alternative is similar to Alternative 5, phase 1 in the Burbank OUFS Report, LASC's alternative does have some different features. (LASC's report can be found in the Administrative Record.)

12.0 STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment -- as required by Section 121 of CERCLA -- in that it treats the extracted groundwater so that remaining contaminants are at or below the MCLs and SALs for the contaminants of concern.

Stripping has been shown to be the most cost effective technology for treating the concentrations of VOCs found in the groundwater from the Burbank OU area. Although the addition of air emission controls (GAC) to the dual stage air strippers (if steam stripping fails to pass the treatability studies) will increase the cost of the selected remedy, it is determined to be justified as a cost-effective measure for the following reasons:

(1) It meets the requirements of SCAQMD Regulation XIII, the ARAR for air discharge from the air stripping treatment; (2) It reduces ozone precursor emissions in a nonattainment area (the South Coast Air Basin) that has the worst air quality in the nation; and (3) It responds to public comments requesting air emission controls to minimize the increase in existing air quality problems regardless of legal requirements.

The selected remedy (either air or steam stripping) meets the ARARs and TBCs that apply to this response action. The selected remedy will meet the Safe Drinking Water Act MCLs and the CA DHS

Table 5
Cost Summary for Alternative 5, phase 1
(air stripping, with vapor
phase GAC)

Item/Description	Estimated Cost ($)
CAPITAL COSTS	
Extraction and Pipeline to Treatment System	5,125,000
Treatment (Dual-Stage as with Vapor Phase GAC)	6,740,000
Connection to Burbank PSD Distribution System	25,000
Monitoirng Well	2,220,000
CAPITAL COSTS	$14,100,000
Fees and Contingencies	4,510,000
Engineering, Legal, Administration	6,520,000
TOTAL CAPITAL REQUIREMENT	$25,100,000
OPERATION AND MAINTENANCE COSTS	
Extraction	793,000
Treatment	3,465,500
Monitoring	33,200
Contingencies	
TOTAL ANNUAL COSTS	$ 4,300,000
Present Worth of O&M Costs (Interest rate = 10%; Years = 20; Present Worth Factor = 8.51)	$43,900,000
TOTAL PRESENT WORTH COST	$69,000,000

State Action Levels in the extracted groundwater that is treated for reuse. Upon the completition of the final remedial action for the site, the MCLs will be met in the aquifer.

It will also meet the SCAQMD's Regulation XIII and Rules 1167 and 1401 by adding air emission controls to the air strippers or using steam stripping.

Finally, it will meet the RCRA requirements as specified in 40 C.F.R. Section 261 and 263. RCRA Subpart B, 40 C.F.R. 261 - Criteria for Identifying Listed Hazardous Waste - identifies the waste as relevant and appropriate to F001 and applicable for U210 and U228. RCRA Part 263 - Standards Applicable to Transporters of Hazardous Waste - specifies compliance with the manifest system for shipment of the spent carbon off-site for regeneration.

The solvent product generated from steam stripping is not considered a RCRA waste if in accordance with 40 C.F.R. Section 261.2(e)(i)(ii) materials are not solid wastes when they can be shown to be recycled by being used or reused as effective substitutes for commercial products.

The selected remedy permanently and significantly reduces the toxicity, mobility and volume of hazardous substances with respect to their presence in groundwater. The contaminants are removed from the groundwater, thereby reducing contaminant migration and restoring the aquifer in the vicinity of the Burbank OU area. The stripping technology will result in a very slight increase in the toxicity, mobility, and volume of hazardous substances with respect to their presence in the air.

Air stripping with vapor phase GAC increases the volume of contamination in the air by transferring that volume, which is not trapped into the carbon for regeneration, from the water to the air. Steam stripping slighty increases the volume of contamination in the air by transferring that volume, which is not recovered as product for recycling, from the water to the air. The VOC volumes released by either method will not exceed the SCAQMD's limits.

The inclusion of air emissions control (vapor phase GAC adsorption units) in the selected remedy (if air stripping is used) reduces the impact of the air emissions in a cost-effective manner to the maximum extent possible. The air emissions are estimated to add a minimal risk to the project via airborne contaminants. The minimal risk addition is due largely to the capabilities of the vapor phase GAC adsorption units to remove 90 to 99% of the contaminants in the air discharged to the atmosphere from the stripper. With the addition of air emission controls, the selected remedy reduces the potential for ozone formation.

Both air and steam stripping meet the statutory preference for remedies that use alternative treatment or resource recovery technologies to the maximum extent practicable. Steam stripping under vacuum pressure is an innovative technology that recovers the VOCs for reuse. If the dual stage air stripping with vapor phase GAC adsorption units is used, the spent carbon from the GAC off-gas treatment system will be regenerated, instead of being disposed of in a landfill. Therefore, the VOCs will be collected for reuse or destroyed.

San Fernando Valley
Burbank Operable Unit

Explanation of Significant Differences
to the
Record of Decision

United States Enivironmental Protection Agency
Region IX - San Francisco, California
November 1990

APPENDIX B

EXPLANATION OF SIGNIFICANT DIFFERENCES
DECLARATION

SITE NAME AND LOCATION

San Fernando Valley Area 1
Burbank Operable Unit
Los Angeles County, California

STATEMENT OF BASIS AND PURPOSE

This decision document presents this Explanation of Significant Differences (ESD) to the interim remedial action selected in the San Fernando Valley, Burbank Operable Unit Record of Decision (ROD) signed June 1989. It was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. Section 9601 et. seq.) and the National Contingency Plan (40 C.F.R. Section 300 et. seq.). This decision is based on the administrative record for this Operable Unit.

DESCRIPTION OF THE SELECTED REMEDY IN THE ROD

The Burbank Operable Unit (OU) ROD selected extraction of contaminated groundwater, treatment by stripping, and use of the treated water as a public water supply by the City of Burbank. The remedy was estimated to cost $69 Million over 20 years.

The ROD stated that the remedy would be the extraction and treatment of 12,000 gallons per minute (gpm) of groundwater, and that EPA would issue another ROD if additional extraction capacity were necessary. At the time, 12,000 gpm was determined to be the extraction rate necessary hydraulically to contain groundwater with concentrations of 100 parts per billion (ppb) of TCE and 5 ppb of PCE, or greater. The extraction wells were to be located optimally to control plume migration while initiating aquifer restoration in the localized Burbank OU area.

The treatment technology selected by the Burbank OU ROD was either air stripping with vapor phase Granulated Activated Carbon (GAC) adsorption technologies or steam stripping with air emission controls. Air stripping with vapor phase GAC adsorption technologies was to be used unless steam stripping with air emission controls was shown to meet the treatment standards of air stripping with vapor phase GAC. The ROD also stated that EPA could decide to use the two technologies together if such use would maximize efficiency.

The ROD stated that the treated water must meet all existing federal and state Maximum Contaminant Levels (MCLs) and State Action Levels (SALs), including those for Volatile Organic Compounds (VOCs). It also stated that the water would have to meet

all drinking water standards, including any which might require further treatment such as chloramination for disinfection purposes, or reverse osmosis or ion exchange for nitrate.

The treated water was to be delivered directly to the City of Burbank's distribution system for use as a public water supply.

Monitoring wells were to be installed around the extraction wells to monitor the hydraulic performance of the extraction system.

The proposed locations for the extraction wells and treatment system were taken from the Operable Unit Feasibility Study (OUFS), October 1988, for the Burbank OU and outlined as a proposal in the ROD for purposes of comparative analysis. The ROD stated that the extraction well locations would be modified if warranted by new data.

SUMMARY OF SIGNIFICANT DIFFERENCES

This ESD clarifies certain points set forth in EPA's June 30, 1989 Burbank OU ROD and, to the extent that the ESD differs from the ROD, the ESD supersedes the ROD. The ESD provides for the following changes to the ROD:

1. The ROD stated that the treated water must meet all drinking water standards, including those standards set for nitrate. The ROD also stated that additional treatment might be necessary for nitrates if they were found to exceed the MCL. Based on new information about nitrate concentrations in the groundwater to be extracted for the Burbank OU, additional measures will be required to meet the MCL for nitrate in any water served as drinking water. After analyzing various options, EPA has decided to require nitrate treatment by blending the water containing nitrate in excess of the MCL with water that does not contain nitrate in excess of the MCL for any water to be served to the public, so that the nitrate MCL will be met in such water supply.

2. The ROD stated that the treated water is to be delivered to the City of Burbank for use as a public water supply. This ESD clarifies that if the City does not accept any or all of the treated water, any remaining portion of water shall be reinjected into the aquifer.

3. This ESD clarifies that the remedy may be designed, constructed, and operated in phases, in order to base technical decisions on the best available information.

4. This ESD clarifies that the remedy selected in the ROD was extraction and treatment of 12,000 gpm of groundwater for twenty years; references to extraction to contain groundwater with concentrations of 100 ppb or greater of TCE and 5 ppb or greater of PCE were for purposes of estimation, not a statement of remedial action selection under the ROD.

5. To the extent that any groundwater is reinjected as part of the remedy, ARARs for this reinjection of the treated groundwater are identified in this ESD. Also, a change to a previously identified ARAR is explained.

DECLARATION

The selected remedy is protective of human health and the environment, attains Federal and State requirements that are applicable or relevant and appropriate to this interim remedial action, and is cost-effective. This remedy satisfies the statutory preference for remedies that employ treatment which permanently and significantly reduces the volume, toxicity or mobility of the hazardous substances as a principal element. It also complies with the statutory preference for remedies that utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. As part of the remedy, groundwater monitoring will be conducted to track contaminant levels at the Burbank Operable Unit and to monitor the performance of the extraction and treatment system in order to ensure adequate protection of human health and the environment.

Daniel W. McGovern
Regional Administrator

11.21.96
Date

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San Fernando Valley Area 1, Burbank Operable Unit

EXPLANATION OF SIGNIFICANT DIFFERENCES

November, 1990

I. INTRODUCTION

On June 30, 1989, the U.S. Environmental Protection Agency (EPA) signed a Record of Decision (ROD) for the San Fernando Valley (SFV) Area 1 - Burbank Operable Unit (Burbank OU). The purpose of this Explanation of Significant Differences (ESD) is to explain the significant differences between the interim remedial action originally selected in the 1989 ROD and the interim remedy which will be implemented at the Site.

Under Section 117 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendment and Reauthorization Act of 1986 (CERCLA), and pursuant to 40 C.F.R § 300.435(c)(2)(i) (55 Fed.Reg. 8666, 8852 (March 8, 1990)), EPA is required to publish an Explanation of Significant Difference when significant (but not fundamental) changes are made to a final remedial action plan as described in a ROD.[1]

This document provides a brief background of the Site, a summary of the remedy selected in the ROD, a description of the changes to the ROD that EPA is making (including how the changes

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1. If the changes made after the ROD was signed had fundamentally altered the nature of the selected remedy, then a ROD amendment would have been required. 40 C.F.R. § 300.435(c)(2)(ii)(1990).

affect and better define the remedy originally selected by EPA in the June 1989 ROD), and an explanation of why EPA is making these changes to the ROD.

EPA is issuing this ESD in order to take into account technical data received after the ROD was signed in June of 1989 and to clarify any ambiguities regarding the selected remedy. The changes are: (1) a description of issues related to nitrate concentration levels in the groundwater, which were found to be higher than shown by earlier data, and an explanation of how these nitrate levels will be addressed during the remedial action; (2) provision of an option to reinject treated water that the City of Burbank does not accept; (3) provision of an option to phase in the 12,000 gallons per minute (gpm) pump and treat remedy; (4) the decision not to require specific cleanup levels to be met in the groundwater for this interim action; and (5) the identification of additional applicable or relevant and appropriate requirements (ARARs).

This ESD and the supporting documentation will become part of the Burbank OU Administrative Record.[2] Copies of the Administrative Record have been placed at the following locations:

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2. EPA held a thirty day public comment period on this ESD. All comments received and EPA's responses to those comments have been included in the Burbank OU Administrative Record, consistent with 40 C.F.R. § 300.825(b). This additional public comment period is not required for an ESD. (Id.; see also, 40 C.F.R. § 300.435(c)(2)(i).) EPA provided this opportunity in order to encourage continuing public input into the decision process for this Site.

City of Burbank Public Library

110 North Glenoaks Boulevard

Burbank, California 91502

(818) 953-9737

Contact: Helen Wang

City of Glendale Public Library

222 East Harvard Street

Glendale, CA 91205

(818) 956-2027

Contact: Lois Brown

II. BACKGROUND

The following gives a brief background of the Burbank OU Site and a short summary of the remedy selected in the ROD. Further background information can be found in the June 30, 1989 ROD and in the Burbank OU Administrative Record.

1. Site Background and Description

In June 1986, EPA evaluated the threat posed by a number of well fields within the San Fernando and Verdugo Groundwater Basins, and designated them as National Priorities List (NPL) hazardous substance sites. Industrial chemicals had been detected in groundwater from these areas. Although four sites in the basin were listed on the NPL, EPA and DWP are managing the investigation of the four sites and the adjacent area as a single project consistent with CERCLA Section 104(d)(4). Figure 1 shows the original location of the SFV Areas 1 through 4 sites and the SFV study area currently being investigated by EPA.

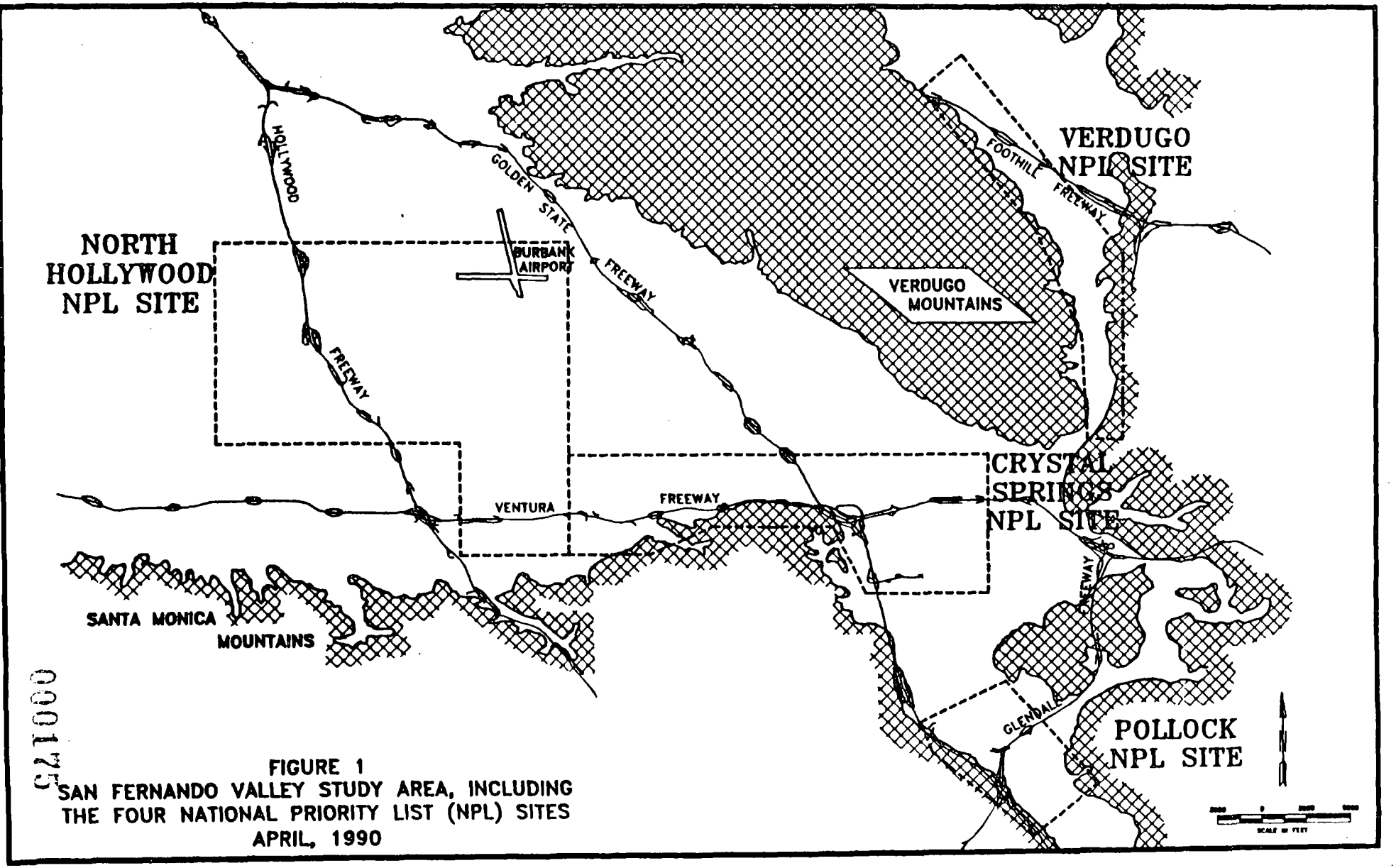

FIGURE 1
SAN FERNANDO VALLEY STUDY AREA, INCLUDING
THE FOUR NATIONAL PRIORITY LIST (NPL) SITES
APRIL, 1990

The San Fernando Valley Groundwater Basin (SFVGB) has historically been, and continues to be, an important source of drinking water for the Los Angeles metropolitan area, including the unincorporated area of La Cresenta, and the cities of Burbank, Glendale, and San Fernando. The groundwater basin provides these communities with enough water to serve approximately 600,000 residents.

Groundwater from the SFVGB is used for residential, commercial, and industrial purposes, and is especially important during years of drought. The groundwater that has become contaminated is difficult to replace. The current water supply from surface water may not always be available in the future because of periodic drought conditions and state and federal water rights issues.

The Burbank OU was developed to address the areal extent of groundwater contamination that is presently generally located in the area of the Burbank Well Field and including any areas to which the groundwater contamination migrates.[3] The Site is part of the SFV Area 1 (North Hollywood) NPL site and includes an area beyond that originally designated as SFV Area 1. Figure 2 shows the area where EPA is currently focusing its efforts relative to

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3. The Burbank OU is the second OU addressing contamination at the SFV Area 1 NPL site. In September 1987, EPA signed the North Hollywood OU ROD for the construction of an extraction and aeration facility to pump and treat contaminated groundwater in the North Hollywood area within the SFV Area 1 NPL site. The plant became operational in March 1989. In September 1989, EPA requested DWP to begin work on the Glendale OU RI, making it the third OU in the SFVB. EPA intends to sign a ROD for the Glendale OU in 1991.

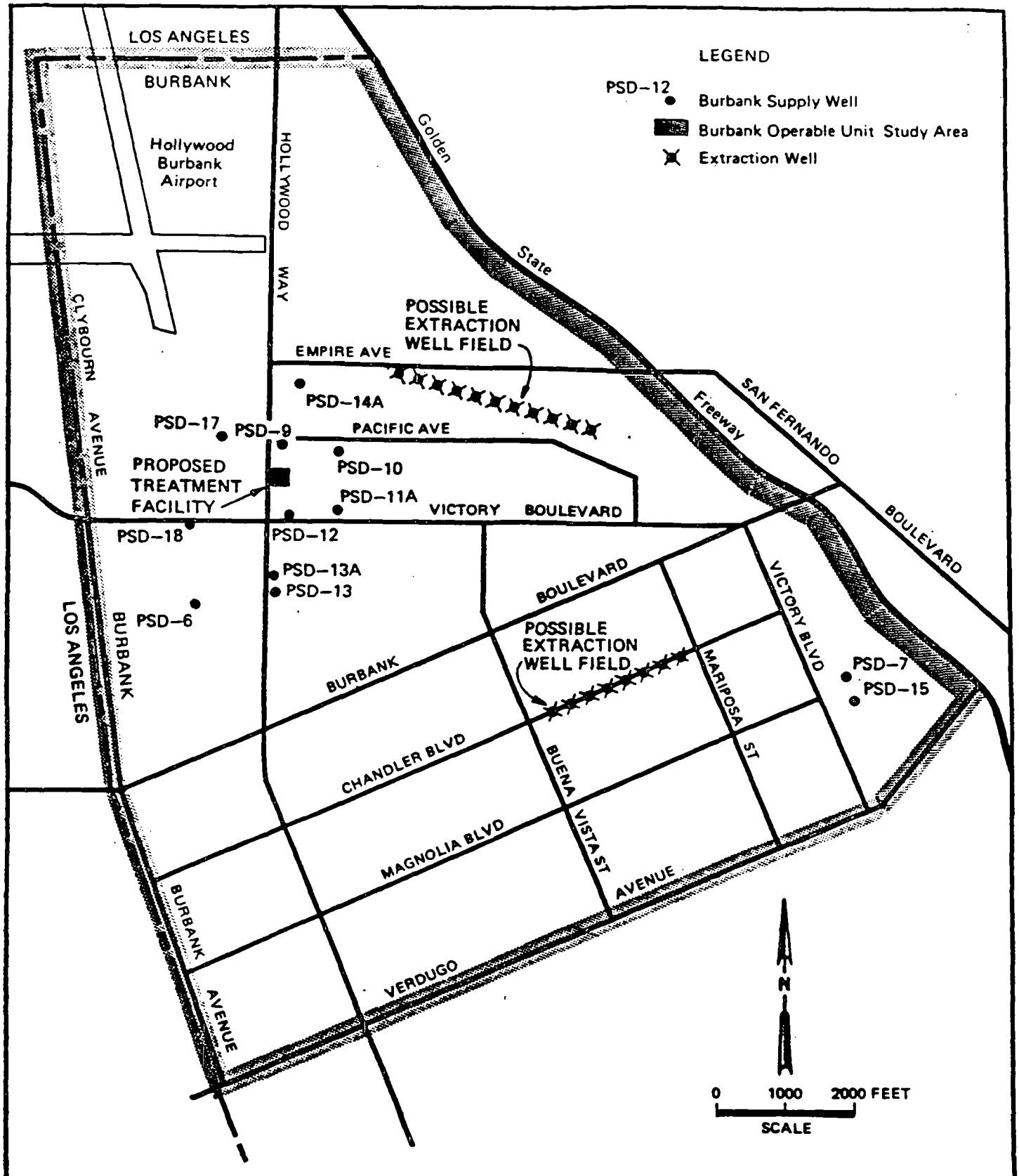

FIGURE 2 BURBANK OPERABLE UNIT STUDY AREA, LOCATION OF BURBANK SUPPLY WELLS, AND POSSIBLE LOCATIONS OF EXTRACTION WELLS AND TREATMENT FACILITY

the Burbank Operable Unit and possible locations for extraction wells and the treatment system (as further outlined in the Administrative Record).

The City of Burbank's production wells have been shut down because the water they produce contained trichloroethylene (TCE) and perchloroethylene (PCE) in concentrations exceeding state and federal maximum contaminant levels (MCLs). Consequently, the City of Burbank now purchases 100 percent of its water, which is imported supply, from the Metropolitan Water District of Southern California (MWD).

2. Selected Remedy

The Burbank OU ROD selected extraction of contaminated groundwater, treatment by stripping, and use of the treated water as a public water supply by the City of Burbank. The remedy was estimated to cost $69 Million over 20 years.

The ROD stated that the remedy would be the extraction and treatment of 12,000 gpm of groundwater, and that EPA would issue another ROD if additional extraction capacity were necessary. (See ROD, pp. 19, 21, and 28.) At the time, 12,000 gpm was determined to be the extraction rate necessary hydraulically to contain groundwater with concentrations of 100 parts per billion (ppb)[4] of TCE and 5 ppb of PCE, or greater. (See ROD, pp. 2 and 19.) The extraction wells were to be located optimally to control plume migration while initiating aquifer restoration in the localized Burbank OU area.

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4. It is assumed for the purposes of the Burbank OU ROD and ESD that micrograms/liter = parts per billion.

The treatment technology selected by the Burbank OU ROD was either air stripping with vapor phase Granulated Activated Carbon (GAC) adsorption technologies or steam stripping with air emission controls. Air stripping with vapor phase GAC adsorption technologies was to be used unless steam stripping was shown to meet the treatment standards of air stripping with vapor phase GAC. The ROD also stated that EPA could decide to use the two technologies together if such use would maximize efficiency.

The ROD stated that the treated water must meet all existing federal and state MCLs and State Action Levels (SALs), including those for Volatile Organic Compounds (VOCs). It also stated that the water would have to meet all drinking water standards, including any which might require further treatment, such as chloramination for disinfection purposes, or reverse osmosis or ion exchange for nitrate.

The treated water was to be delivered directly to the City of Burbank's distribution system for use as a public water supply.

Monitoring wells were to be installed around the extraction wells to monitor the hydraulic performance of the extraction system.

The proposed locations for the extraction wells and treatment system were taken from the Operable Unit Feasibility Study (OUFS), October 1988, for the Burbank OU and outlined as a proposal in the ROD for purposes of comparative analysis. The ROD stated that the extraction well locations would be modified if warranted by new data.

III. SUMMARY OF SIGNIFICANT DIFFERENCES

This ESD clarifies certain points set forth in EPA's June 30, 1989 Burbank OU ROD and, to the extent that the ESD differs from the ROD, the ESD supersedes the ROD. The ESD provides for the following changes to the ROD:

1. The ROD stated that the treated water must meet all drinking water standards, including those standards set for nitrate. The ROD also stated that additional treatment might be necessary for nitrate if it exceeds the MCL (ROD, p.29). Based on new information about nitrate concentrations in the groundwater to be extracted for the Burbank OU, additional measures will be required to meet the MCL for nitrate in any water served as drinking water. After analyzing various options, EPA has decided to require nitrate treatment by blending water containing nitrate in excess of the MCL with water which does not contain nitrate in excess of the MCL, for any water to be served to the public, so that the nitrate MCL will be met in such water supply.

2. The ROD stated that the treated water is to be delivered to the City of Burbank for use as a public water supply. This ESD clarifies that if the City does not accept any or all of the treated water, any remaining portion of water shall be reinjected into the aquifer.

3. This ESD clarifies that the remedy may be designed, constructed, and operated in phases, in order to base technical decisions on the best available information.

4. This ESD clarifies that the remedy selected in the ROD was extraction and treatment of 12,000 gpm of groundwater for twenty years; references to extraction to contain groundwater with concentrations of 100 ppb or greater of TCE and 5 ppb or greater of PCE were for purposes of estimation, not a statement of remedial action selection under the ROD.

5. To the extent that any groundwater is reinjected as part of the remedy, ARARs for this reinjection of the treated groundwater are identified in this ESD. Also, a change to a previously identified ARAR is explained.

IV. EXPLANATION AND DETAILED DESCRIPTION OF CHANGES AND CLARIFICATIONS

After the ROD was signed, EPA received and reviewed new data which included information from the Lockheed Aeronautical Systems Corporation (LASC) Phase IV Cluster wells and the Remedial Investigation Vertical Profile Borings/Shallow Monitoring wells. Reports and technical memoranda were received and/or generated as a result of this new information in preparation for this ESD. The new and the existing technical information upon which EPA relied in making the significant changes described in this ESD can be found in the Administrative Record.

a. Background

Currently available information indicates that the groundwater containing VOCs above the MCLs is for the most part found in the upper 200 feet of the aquifer beneath the Burbank OU area, not in the upper 500 feet as assumed in the Burbank OUFS report.[5] Moreover, the information also indicates that shallow groundwater contains nitrate concentrations above the MCL.

When the OUFS report was prepared, EPA believed that the groundwater to be extracted and treated for VOCs would meet all drinking water standards for constituents other than the VOCs without further treatment (beyond the VOC treatment). The Burbank OU ROD stated that the treated groundwater must meet all ARARs identified in the ROD, including those for extracted groundwater to be served as drinking water (i.e. the drinking water standards), and that additional treatment might be necessary for contaminants such as nitrate if they were found to exceed the MCL (see ROD, p.29). With this ESD, EPA explicitly defines the additional measures required for disposal of VOC-treated effluent containing nitrate concentration levels above the MCL.

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5. It should be noted that conditions can change. For example, fluctuations in groundwater levels can impact the amount of VOC contamination that is either released or not released from the unsaturated zone. Moreover, contamination can migrate both vertically and horizontally into other areas. These factors will be considered during the design phase(s).

The "Nitrate Reduction for the Burbank Operable Unit Technical Memorandum" describes four different options EPA analyzed to address the disposal of VOC-treated effluent containing nitrate concentrations that exceed MCLs. In that memorandum, the necessary capital and operations and maintenance (O & M) requirements as well as the relative advantages and disadvantages of each of those four options are presented.[6]

b. Options

While CERCLA Section 117(c) and 40 C.F.R. § 300.435(c)(2)(i) merely require an explanation of the significant differences and the reasons for these differences, this ESD sets out in detail four options for disposal of VOC-treated effluent, and EPA's analysis of these options. The four options are as follows:

1. Extraction of groundwater from selected aquifer zones beneath the Burbank OU area. By preferentially pumping from different aquifer zones, the extracted water would be blended in order to lower nitrate concentration levels to below the MCL before VOC treatment by stripping, and use by the City of Burbank. See Figure 3.[7]

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6. The Los Angeles Department of Water and Power prepared, at EPA's request, the "Nitrate Reduction For the Burbank Operable Unit" Technical Memorandum. EPA relied upon the Administrative Record, including this Technical Memorandum, for the development of the four options outlined in the ESD. The Technical Memorandum options 1, 2, 3, 4 generally correspond to the ESD options 1, 3, 4, 2, respectively. The four options analyzed in this ESD are set forth in the next section.

7. In the aquifer zones where the nitrate concentrations appear to be lower, VOC concentrations also appear to be lower. Since some water would be extracted from the zones with lower nitrate concentrations in order to blend this water with the water from the zones with higher nitrate concentrations, the total volume of groundwater extracted under Option 1 would be lower in both nitrate and VOC concentrations.

Option 1

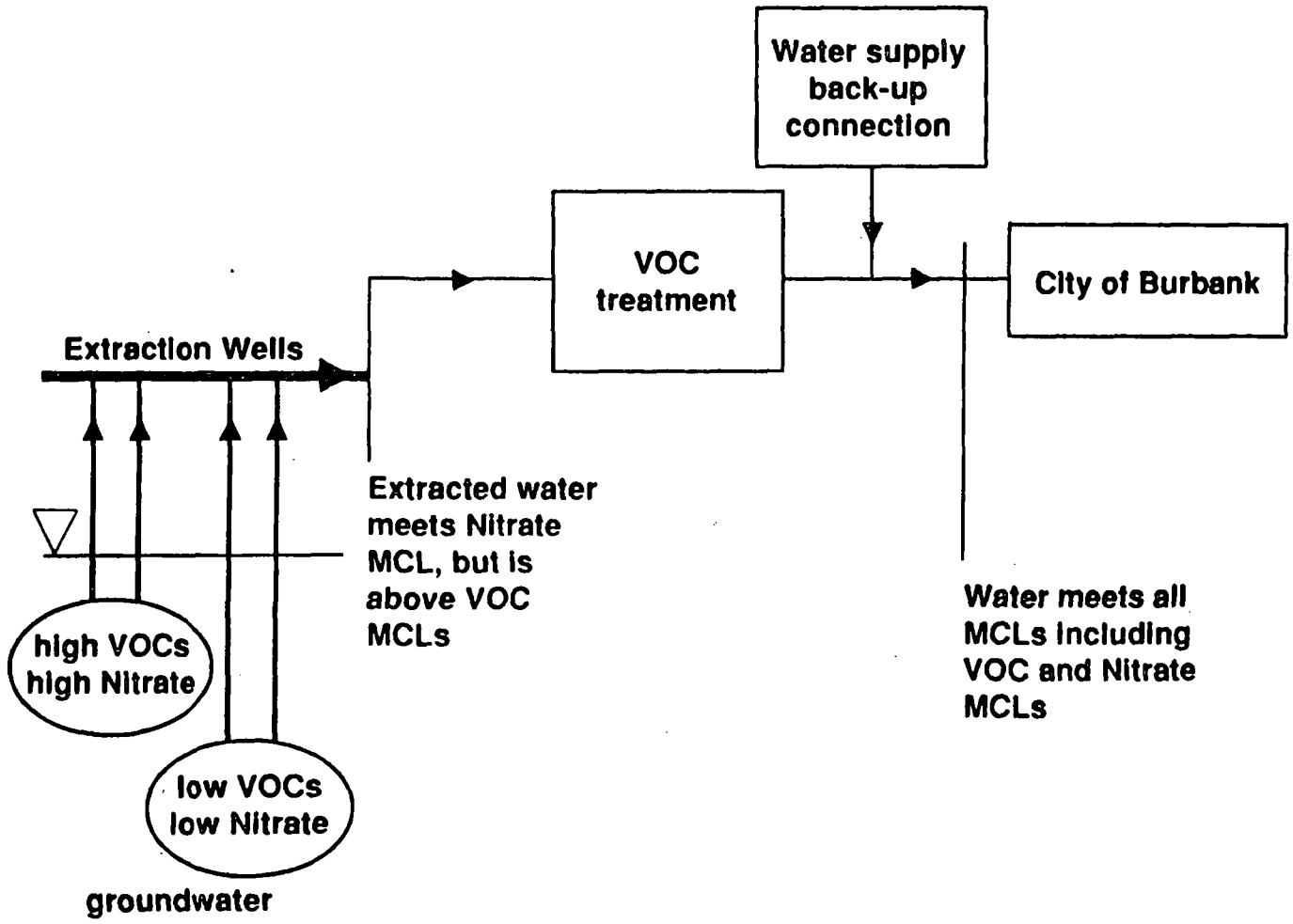

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Figure 3

2. Extraction of groundwater from the most VOC-contaminated zone, VOC treatment by stripping, and: (a) nitrate reduction by blending water containing nitrate in excess of the MCL with water which does not contain nitrate in excess of the MCL[8] and use by the City of Burbank; and/or (b) reinjection of the water into an area with similar nitrate concentrations.[9]/[10] See Figure 4.

3. Extraction of groundwater from the most VOC-contaminated zone, VOC treatment by stripping, nitrate treatment by ion exchange,[11] and use by the City of Burbank. See Figure 5.

4. Extraction of groundwater from the most VOC-contaminated zone, VOC treatment by stripping, and reinjection of the water into an area with similar nitrate concentrations. See Figure 6.

The option for disposal of VOC-treated effluent containing nitrate concentrations above the MCL that EPA is choosing in this ESD is Option 2. The total blended water supply to be served as a public drinking water supply will meet the nitrate MCL. The following analysis explains why this option is preferred over the others.

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8. The California Department of Health Services has determined that such blending is an acceptable form of treatment for nitrate. See Memorandum from Alisa Greene to Administrative Record, dated July 2, 1990.

9. The water to be reinjected will meet all primary drinking water standards other than that for nitrate.

10. Alternative 2, by extracting 12,000 gpm of groundwater and blending it with some unknown amount of surface water may produce a total water supply that is greater than the City of Burbank can use. See page 27, below, for a discussion of this issue.

11. See Administrative Record for a discussion of other nitrate removal treatments that were screened out during the preliminary analysis for this ESD.

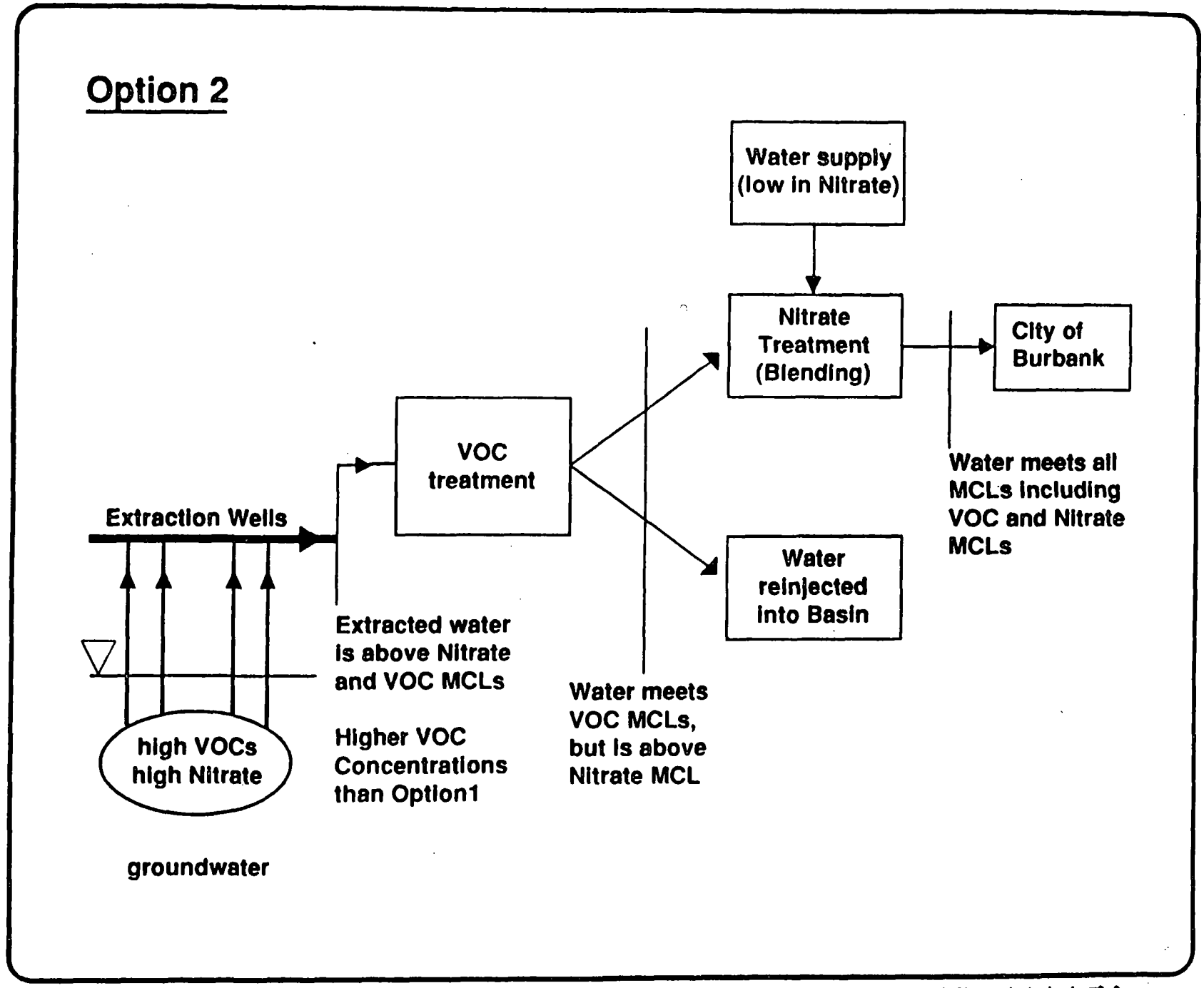

Figure 4

Option 3

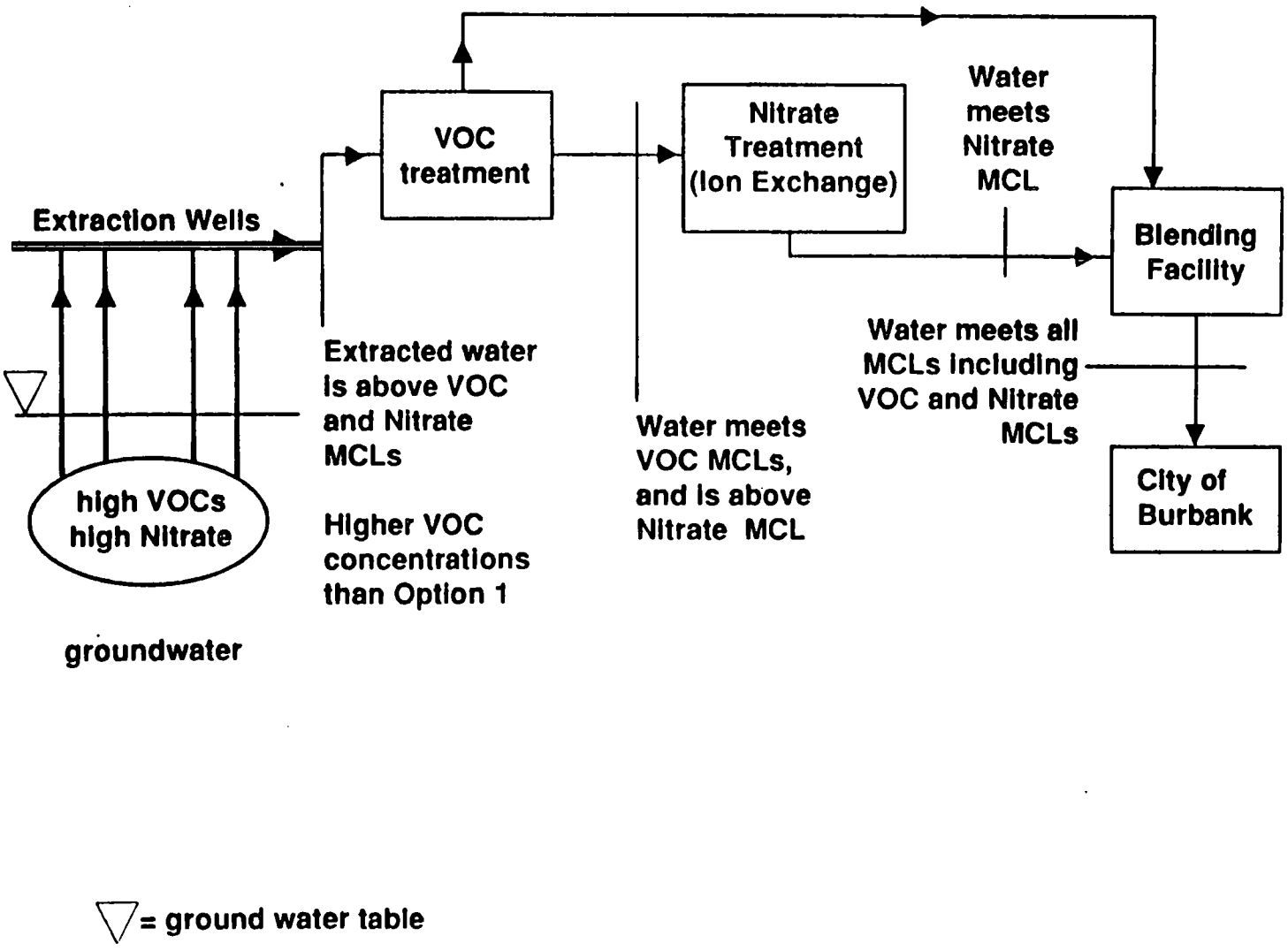

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Figure 5

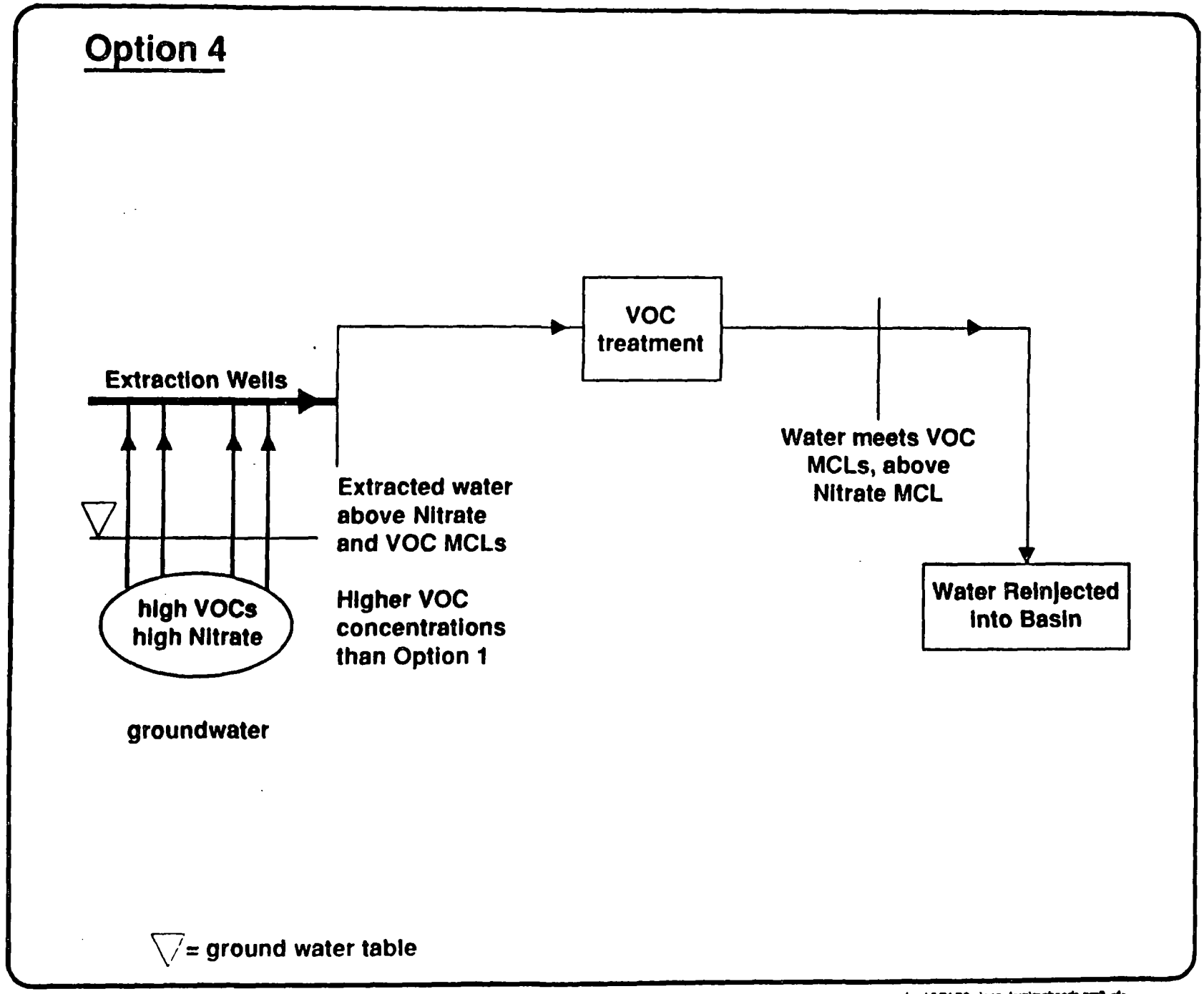

Figure 6

c. Analysis of Options for Addressing Nitrate

The four options presented above were compared with each other based on the nine criteria listed and explained in the National Contingency Plan, 40 C.F.R. § 300.430(e)(9)(iii). The nine criteria and the results of the comparison of the options are presented in this subsection. The nine criteria are as follows:

(1) compliance with applicable or relevant and appropriate requirements (ARARs),
(2) overall protection of human health and the environment,
(3) short-term effectiveness in protecting human health and the environment,
(4) long-term effectiveness and permanence in protecting human health and the environment,
(5) reduction of toxicity, mobility, and volume of contaminants,
(6) technical and administrative feasibility of implementation,
(7) capital and operation and maintenance costs,
(8) state acceptance, and
(9) community acceptance.

All four options meet the following criteria equally well:

(1) compliance with ARARs,
(2) overall protection of human health and the environment, and
(3) short-term effectiveness in protecting human health and

Compliance with ARARs

The main purpose of this interim remedial action is to control the spread of the VOC plume in the aquifer.[12] This is being done by the pumping of wells to inhibit the spread of the plume, followed by the treatment of extracted groundwater in a 12,000 gpm treatment plant to remove the VOCs. Because pumping and treating for the VOCs requires that there be a disposal option for the VOC-treated effluent, and because the zones of the the aquifer containing the VOCs also contain nitrate concentrations in excess of the MCL, the four options under consideration were developed for disposal of VOC-treated effluent. There are several sets of requirements that must be considered in analyzing these options.

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12. The ROD recognized that chemical-specific ARARs for the groundwater itself would be met in the final remedy for this site. (See ROD, page 23.) Since the remedial action adopted pursuant to the ROD and this ESD is an interim action, these chemical-specific ARARs for the groundwater contaminant plume do not apply to the activities undertaken pursuant to this ESD. In explaining the requirements of the National Contingency Plan ("NCP"), the preamble to the NCP states:

> Several commenters also stated that chemical-specific ARARs used as remediation goals, such as MCLs as ARARs for ground water remediation, cannot be attained during implementation. EPA wants to clarify that it recognizes that ARARs that are used to determine final remediation levels apply only at the completion of the action.

See 55 Fed. Reg. 8754 (March 8, 1990). Therefore, chemical-specific requirements to be met in the aquifer at the end of the final remedy are not ARARs for this interim action and therefore are not relevant to choosing among the options available.

First, any water to be reinjected onsite must meet all action-specific ARARs for reinjection. The action-specific ARARs for reinjection are identified below in Subsection 5 of this Section. The reinjection must meet the "Statement of Policy With Respect to Maintaining High Quality of Waters in California," (an ARAR for reinjection), which requires that the reinjected water not unreasonably degrade existing water quality. This ARAR can be met by ensuring that the water is reinjected into an area containing nitrate concentrations similar to the concentrations in the water to be reinjected, by taking into account the quality and quantity of the water to be reinjected, and by ensuring that the water to be reinjected meets the primary drinking water standards for all other contaminants. Options 2 and 4 each: (a) result in the removal of VOCs by the treatment plant; and (b) provide a means whereby the water to be reinjected would meet all ARARs for reinjection.

Secondly, the water to be used as a public water supply offsite must also meet all drinking water standards, including that for nitrate, as explained below. Options 1, 2 and 3 each: (a) result in the removal of VOCs by the treatment plant, and (b) provide a means whereby the MCL for nitrate would be met in the water to be served as a public water supply, without having the treatment plant effluent meet the nitrate MCL. Thus, all MCLs other than the MCL for nitrate would have to be met in the water to be blended. After blending, such water would have to meet all MCLs.

Because of the need to comply with the "Statement of Policy With Respect to High Quality of Waters in California," all primary drinking water standards other than the MCL for nitrate must be met in the treatment plant effluent, whether it is to be used for drinking water or reinjected. Therefore, all primary drinking water standards other than the nitrate MCL are ARARs for the treatment plant effluent.

In addition to meeting ARARs, when any water from the treatment plant is served offsite, all applicable requirements for drinking water in existence at the time that the water is served will have to be met. See 55 Fed. Reg. 8758 (March 8, 1990). Since this activity would take place offsite, these requirements are not ARARs within the meaning of CERCLA Section 121(d), which term refers to onsite actions. Therefore, these requirements, as they apply to the water to be served offsite as a public water supply, are not "frozen" as of the date the ESD is adopted, as are onsite ARARs. See 40 C.F.R. § 300.430(f)(1)(ii)(B). Rather, they change over time as new laws and regulations applicable to drinking water change. See 55 Fed. Reg. 8758 (March 8, 1990).[13]

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13. If a primary drinking water standard or other requirement changed, EPA would ensure that the onsite remedy complied with 40 C.F.R. § 300.430(f)(1)(ii)(B)(1), which states that "[r]equirements that are promulgated or modified after ROD signature must be attained (or waived) only when determined to be applicable or relevant and appropriate and necessary to ensure that the remedy is protective of human health and the environment." Thus, if any requirement changed in the future and EPA determined that the onsite activities had to comply with that new requirement in order to remain protective of human health and the environment, EPA would ensure that the remedy complied with the new requirement.

Options 1 and 3, and Option 2 (unless the City does not accept the water), involve serving the extracted water through the public water supply system. Each of these options include VOC treatment to meet the VOC MCLs and some other treatment method to meet the nitrate MCL before the water is provided as a public water supply, and would result in the achievement of the ARARs identified for the treated effluent, and would also result in the MCL for nitrate being met.

Option 4, and Option 2 (if the City does not accept all of the treated water) involve reinjection of the treated water into the aquifer. The water from the treatment plant would meet all current requirements for drinking water other than the nitrate MCL. Because this option only involves reinjection into an area of the aquifer with similar concentrations of nitrate, and because any other requirements for reinjection, including those stemming from the Water Quality Control Plan for the Los Angeles Basin, would be met, this option would meet the ARARs for reinjection.

Overall Protection of Human Health and the Environment

All four options protect human health and the environment. In Options 1, 2, and 3, institutional controls (e.g. monitoring) would be used to confirm that no contaminated groundwater was being served as drinking water. Under Option 4, no treated groundwater would be served as public drinking water. Thus, public health would be protected under all four options. All

four options would provide environmental protection by instituting interim remedial action to inhibit spreading of the VOC plume and to remove VOCs from the groundwater.

Short-Term Effectiveness

For all four options, no adverse short-term impacts would be expected during the construction of the facilities or the remediation. Drinking water supplies would be provided from another water supply (other than treated groundwater) and/or treated groundwater during the interim period before construction is completed (both initially and during the phasing in of the system) and during remediation. Institutional controls would assure that the drinking water would meet drinking water standards.

There are some differences in the options when it comes to the following criteria

(4) long-term effectiveness and permanence in protecting human health and the environment,

(5) reduction of toxicity, mobility, and volume of contaminants,

(6) technical and administrative feasibility of implementation,

(7) capital, and operation and maintenance costs,

(8) state acceptance, and

(9) community acceptance.

Long-term Effectiveness and Permanence

All four options would maintain reliable protection of human health and the environment over time. However, Options 2, 3, and 4 would be more effective and permanent than Option 1.

Options 2, 3, and 4 would be more effective in controlling the plume(s) migration and aquifer restoration than would Option 1 because each of the former would remove a greater mass of VOCs per volume of water extracted than would the latter. In order to meet the nitrate MCL, Option 1 would selectively extract groundwater from different zones within the aquifer. These zones have different nitrate (and VOC) concentrations. Generally, where the nitrate concentrations are lower so are the VOC concentrations. Therefore, the total volume of water extracted from the different zones within the aquifer would have lower nitrate concentrations, and lower VOC concentrations, than would the total volume of water extracted from the zones with the highest VOC concentrations. Therefore Option 1 would not extract as great a mass of VOCs per volume as Options 2, 3, and 4, which would extract and treat groundwater from the most contaminated VOC zones.

Reduction of Toxicity, Mobility, and Volume

Options 2, 3 and 4 would have the greatest effect on reducing the toxicity, mobility, and volume of VOCs. These three options would treat an equal amount of the VOCs from the groundwater. As explained above under "Long-term Effectiveness and Permanence," Option 1 would not treat as much of the VOC contamination as would Options 2, 3, and 4. Therefore, it would not have as great an impact on the reduction of the toxicity, mobility and volume of VOCs in the groundwater as would the other options.

Option 3, and to a lesser extent Option 1, would also remove nitrate from the groundwater, thereby reducing the toxicity, mobility and volume of nitrate in the groundwater. Option 4 would result in little or no change in the toxicity, mobility and volume of nitrate, but the reinjected water could be used to create a hydraulic barrier to inhibit further migration of VOC-contaminated groundwater or to increase the flow of contaminated water to the extraction wells. To the extent that Option 2, in practice, involved serving the water to the City of Burbank, it would result in a reduction in toxicity, mobility and volume of nitrate similar to that which would occur under Option 3; to the extent that Option 2, in practice, involved reinjecting the water, it would result in no change in the toxicity, mobility and volume of nitrate, but (as with Option 4), the reinjected water could be used to create a hydraulic barrier to inhibit further migration of VOC-contaminated groundwater or to increase the flow of contaminated water to the extraction wells.

Implementability

All four options have extraction and monitoring wells and VOC treatment by stripping.[14]

Option 1 would employ the same treatment as was proposed in the ROD, except for blending. Option 1 would require additional facilities, including a metered MWD connection, a pipeline from

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14. The ROD discusses the implementability of the extraction and monitoring wells and VOC treatment by stripping.

the MWD connection to the City of Burbank's Valley Forebay, and retrofitting of the Valley Forebay to add blending capability.[15] Option 1 would provide simple and reliable operation.

Option 3 would add an additional treatment facility to the treatment system chosen in the ROD: ion exchange.[16] This would be the most difficult option to implement. Although ion exchange is a proven technology, it is more complex and requires more operation and maintenance (O & M) than blending. Additionally, ion exchange generates a brine solution as waste, and it is difficult to either reuse or dispose of this solution. Furthermore, additional space and piping would be needed for facilities to treat the concentrated brine solution prior to its disposal. There is not enough space at the Valley Forebay Station - where the treatment system may be located and to which the water ultimately must be delivered - for the stripping treatment system, ion exchange treatment system, and brine solution waste storage and treatment system. These additional requirements would make Option 3 more difficult to implement than the other options.

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15. Option 1 would require the additional facilities as backup in case the nitrate concentrations were still above the MCL after the selective extraction of groundwater and VOC treatment.

16. Option 3 would also require the City of Burbank's Valley Forebay to be retrofitted for blending capacity. After VOC treatment, part of the groundwater would be treated by ion exchange and part of the groundwater would be fed directly into the Forebay for blending. It is a common practice with nitrate removal treatment systems to treat some of the water and blend it with another part to reach the desired concentrations.

Under Option 4, the only change to the remedy described in the ROD would be that instead of delivering the treated water for use, the VOC-treated water would be reinjected into the aquifer. Under Option 4, nitrate treatment would not be necessary because nitrate concentrations are similar throughout the Burbank OU area (where both the extraction and injection of the groundwater would occur). The reinjection wells could be constructed and operated (they are a proven method for injection of water into an aquifer); however, additional maintenance requirements would be expected due to potential clogging of the reinjection wells. Moreover, the reinjection wells would need to be carefully located to assure that the injection of water would not further complicate the groundwater contamination. Therefore, Option 4 would be a more difficult option to implement than Option 1.

Option 2 would also add additional facilities to the system chosen in the ROD for blending and reinjection. Option 2 would require the same facilities for blending as would Option 1. Furthermore, Option 2 would require the reinjection facilities presented above for Option 4, except that Option 2 may not require as great a reinjection capacity as Option 4; therefore, Option 2 would be more difficult to implement than Option 1, less difficult to implement than Option 3, and possibly less difficult to implement than Option 4 (depending on the necessary reinjection capacity).

Costs

The following discussion compares the additional costs of the options above the estimate given in the June 1989 ROD.[17]

Option 1 is the least expensive of the four options. The additional capital cost for this option is estimated to be $ 2.2 Million. The additional annual O & M costs are estimated to be $ 20,000. The total additional cost for 20 years is estimated to be $2.4 Million.

Option 4 is more expensive than Option 1, but less expensive than Option 3 and potentially less or more expensive than Option 2. The additional capital cost is estimated at $ 6.8 Million. The additional annual O & M costs are estimated at $ 20,000. The total additional cost for 20 years is estimated to be $ 7.0 Million.

Option 2 is more expensive than Option 1 and potentially more or less expensive than Option 4, but less expensive than Option 3. The additional capital cost is estimated to be $ 8.5 Million.[18] The actual cost will depend on the required reinjection capacity. The cost would be approximately $ 9.1 Million if all the treated groundwater were reinjected, and the blending facilities were added for backup (equivalent to the costs of Option 1 plus Option 4). If no treated groundwater were reinjected

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17. Cost estimates are present worth values with a %10 interest rate.

18. This cost estimate assumes that one-half of the groundwater (6000 gpm) would be used for a public water supply and one-half of the groundwater (6000 gpm) would be reinjected. The cost estimate includes all of the facilities for Option 1 plus Option 4, minus five of the ten reinjection wells (6000 gpm capacity) in Option 4. Five of the ten reinjection wells would not be needed if only 6000 gpm of groundwater were reinjected instead of 12,000 gpm.

than the cost would be approximately $ 2.2 Million (the same as the cost for Option 1). The additional annual O & M costs are estimated to be slightly less than $40,000.[19] The total additional cost is estimated at $ 8.8 Million over a twenty year period.[20]

Option 3 is the most expensive option. The additional capital cost is estimated to be $ 9.2 Million. The additional annual O & M costs are estimated to be $ 1.8. Million. The total additional cost for 20 years is estimated to be $24.6 Million.

State Acceptance

The California Regional Water Quality Control Board, Los Angeles Region (RWQCB-LA) supports the use of the treated water as drinking water, provided that all requirements for the serving of public drinking water are met, and prefers the options that provide the water from the treatment plant as a public water supply either by blending with surface water to reduce nitrates or by treating for nitrates through ion exchange. See June 8, 1990 Letter from Hank H. Yacoub, RWQCB-LA, to Alisa Greene, EPA, in the Administrative Record. The Regional Water Quality Control Board agrees that treated groundwater containing nitrates can be

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19. The estimate depends on the required reinjection capacity. The $40,000 assumes that one-half of the water would be used as a public water supply and one-half of the water would be reinjected (Option 1 + Option 4). See the "Nitrate Reduction For the Burbank Operable Unit" Technical Memorandum.

20. The estimate depends on the required reinjection capacity. The $8.8 Million assumes that one-half of the water would be used as a public water supply and one-half of the water would be reinjected (Option 1 + Option 4, minus approximately $600,000, the cost of five of the ten reinjection wells). See the "Nitrate Reduction For the Burbank Operable Unit" Technical Memorandum.

reinjected into the aquifer (Options 2 and 4) in compliance with the "Statement of Policy With Respect to Maintaining High Quality of Waters in California." See June 20, 1990 Letter from Robert P. Ghirelli, RWQCB-LA, to Alisa Greene, EPA, in the Administrative Record. Although the California Department of Health Services (CA DHS) Toxic Substances Control Division did not state any preferences or rejections of any of the options, it did have comments about reinjection of the water (Options 2 and 4), to which EPA has responded. (See May 15, 1990 Letter from Hamid Saebfar, CA DHS, to Alisa Greene, EPA, in the Administrative Record). The CA DHS - Office of Drinking Water did not state any preferences or rejections of any of the options in their comments to EPA (see June 11, 1990 Letter from Gary H. Yamamota, CA DHS, to Alisa Greene, EPA, in the Administrative Record).

Community Acceptance

EPA believes that the community would prefer Options 2, 3 and 4 over Option 1, since these options address the VOC contamination more efficiently and more permanently. The community is also expected to prefer Option 2 or 3 over Option 4, since these options either provide a public water supply or have the potential to provide a public water supply.

EPA held a thirty day public comment period on the proposed ESD. No individual members of the public commented. The City of Glendale's Public Service Department commented that they concurred with EPA's decision in selecting a remedy that provides

"flexibility on serving treated water for community use." See Comment by Glendale Public Service Department in the Administrative Record.

d. Decision Regarding Nitrate

Based on the foregoing analysis of the four options, EPA has decided to choose Option 2, which consists of extraction of groundwater from the aquifer zones containing the highest VOC concentrations, VOC treatment by stripping, and then: (a) nitrate reduction by blending and use as a public water supply by the City of Burbank; and/or (b) reinjection of the treated groundwater, (without blending). Option 2 is the preferred alternative for several reasons: (1) it will result in a greater reduction of the toxicity, mobility and volume of VOC contaminants in the aquifer than would Option 1. (The reduction of VOC contamination in the aquifer is one of the two purposes of this interim remedial action, as specified in the ROD.); (2) Option 2 will result in greater long-term effectiveness and permanence in protecting human health and the environment than would Option 1; (3) Option 2 has the potential to result in a greater reduction of nitrate in the groundwater than either Options 1 or 4; (4) Option 2 does not require additional space and avoids the additional operation and maintenance requirements resulting from a more complicated treatment system (such as ion exchange), thereby making implementation of Option 2 more technically and administratively feasible than the implementation of Option 3; (5) Option 2 is less expensive than Option 3, and may be less or more expensive to the cost of Option 4 (depending on how much

water is reinjected), while providing adequate protection of public health and the environment; and (6) Option 2 also has the potential to provide a public water supply to the City of Burbank, (the other purpose for this interim action, as stated in the ROD).

If for any reason the City does not accept the water, then EPA prefers Option 4 over either Option 1 or Option 3. This is implicit in EPA's selection of Option 2, which allows any water not accepted by the City to be reinjected. EPA prefers Option 4 over Options 2 and 3 even if all of the water must be reinjected. EPA prefers Option 4 over Options 1 and 3[21] because: (1) it will result in greater reduction of volume, toxicity and mobility of VOCs than would Option 1; (2) Option 4 would result in greater long-term effectiveness and permanence in protecting human health and the environment than would Option 1; (3) Option 4 would not require additional space and avoids the additional maintenance requirements resulting from a more complicated treatment system (such as ion exchange), thereby making implementation of Option 4 more technically and administratively feasible than the implementation of Option 3; and (4) Option 4 would be less expensive than Option 3, while providing adequate protection of public health and the environment.

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21. In other words, these are the reasons that EPA prefers Option 2 even if all of the water must be reinjected.

2. Use and/or Reinjection

The June 1989 ROD stated that the treated water would be delivered to the City of Burbank for use. Because this ESD provides for nitrate treatment by blending with an additional source of water, the total treated water supply may be greater than that which the City of Burbank can accept. Currently, the City cannot accept more than 12,000 gpm, due to capacity constraints. Of course, over the 20 year cleanup period, the amount of water the City could accept may change. Also, in the future, there could be other reasons why the City of Burbank would not accept some or all of the water. This ESD deals with this contingency by recognizing, in Option 2, that the amount of water the City can accept may vary over time. Because the treatment of VOC contamination in the groundwater depends on having a discharge option for the VOC-treated water, EPA is including in this ESD the ability to reinject any or all of the groundwater that is not accepted as drinking water by the City.

The Burbank OUFS Report discusses, in detail, reinjection with partial use as the discharge option for the treated water (Alternatives 2 and 3 from the OUFS Report). As noted in the Burbank OUFS Report, reinjection could enhance the cleanup process by creating a hydraulic barrier to inhibit further contaminant migration or by increasing the flow of contaminated water toward the extraction wells.

When the ROD was signed there were two concerns with the reinjection discharge option: (1) because of the uncertainties associated with the extent of contamination, further spreading of

contamination could occur if the injection wells were improperly placed; and (2) operational problems encountered with injection wells, such as the clogging of wells.

Given the new information from the LASC Phase IV and EPA RI monitoring results, the extent of contamination is now better characterized. Future monitoring of these and other wells will characterize the extent of contamination even further. Therefore, EPA now believes that the injection wells could be located to enhance, rather than impede, cleanup of the VOCs in the groundwater.[22/23]

As discussed in the previous section, Analysis of Alternatives for Addressing Nitrate (pages 12 through 24), Option 2 is protective of human health and the environment, complies with all ARARs, and is cost effective (i.e., meets the criteria as discussed in 40 C.F.R. § 300.430(e)(9)(iii)) and thus is an acceptable remedial option. Furthermore, Option 2 also has certain advantages in terms of reduction of toxicity, mobility and volume of hazardous substances and/or contaminants, long-term effectiveness and permanence, implementability, and acceptance by the state and community.[24]

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22. Also, LASC has a temporary permit from the Regional Water Quality Control Board to operate a pilot injection well project. This pilot project will give EPA more information about potential impacts to the receiving groundwater and injection system design and operation, which will result in an increased ability to locate and design properly the injection wells for the reinjection, if it is necessary.

23. EPA approval will be required to assure that the injection well locations will not interfere with other remedial actions or remedial investigation studies or further exacerbate the groundwater contamination.

3. Remedial Action Phasing and Location of Extraction Wells

This ESD makes clear that, as appropriate, the remedial action selected in the 1989 ROD and as modified by this ESD may be implemented in phases. Monitoring and technical evaluations would occur during each phase. These evaluations would provide the data for better characterization of the aquifer with respect to hydraulic parameters and water quality. This would allow for a more effective and efficient performance of the remedial action than if it were to be done all at one time.

If the remedy is implemented in phases, there would most likely be three phases. The first phase would consist of extraction and treatment of 6,000 gpm of groundwater and use and/or reinjection of the treated water supply. The second phase would consist of extraction and treatment of an additional 3,000 gpm of groundwater and use and/or reinjection of the treated water supply. The third phase would include the extraction and treatment of an additional 3,000 gpm of groundwater and use and/or reinjection of the treated water supply.

There is more information regarding the alternative of phasing of the remedial action in the Administrative Record.

Based on new information,[25] EPA also analyzed locations for

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24. Option 4 is also protective of human health and the environment, complies with all ARARs not waived, and is cost-effective. Therefore, it is also an acceptable alternative. In Section IV.1.d., above, EPA set forth both the reasons it prefers Option 2 to all of the other options, and the reasons it prefers Option 4 to Options 1 and 3.

25. Data from the LASC Phase IV - Monitoring Program and the EPA Remedial Investigation VPBs/Shallow Monitoring wells indicate that the TCE and PCE contamination extends south of the Burbank Boulevard, which is further south than originally described in

extraction wells other than those analyzed in the Burbank OUFS Report for their overall effectiveness in plume control and aquifer restoration. (See the "Technical Memorandum Supplement to the Administrative Record for the Burbank Operable Unit" in the Administrative Record.)

This Technical Memorandum indicates that more effective plume control would be attained if the extraction wells were located further south than those proposed in the Burbank OUFS Report (see Figure 2 for possible location of the extraction well field).

As in the ROD, EPA will not select the exact locations for the wells and treatment plant in this ESD, but will generally describe possible locations for purposes of comparative analysis. The flexibility to choose the exact locations during the design phases, when further information is available, is necessary to maximize the efficiency, reliability and cost effectiveness of the remedial action.

4. Amount of Water To Be Extracted and Treated

The 1989 Burbank OU ROD described the remedy as "extraction and treatment of 12,000 gpm of groundwater for 20 years" and "extraction to capture groundwater containing 100 ppb or greater of TCE and 5 ppb or greater of PCE." (See ROD, pp. 2 and 28.) The remedy was described in this dual fashion because, based on the information available at that time, EPA estimated that the

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the Burbank OUFS Report (See Figures 2.3.5 and 2.3.6 to the Burbank OUFS). That analysis can be found in the Administrative Record.

remedy of extracting 12,000 gpm of groundwater for 20 years would result in capturing groundwater containing 100 ppb and 5 ppb levels of TCE and PCE, respectively. Based on the previously identified new information, EPA believes that the 12,000 gpm extraction system will necessarily capture 100 ppb level for TCE and the 5 ppb level for PCE. Given this information, EPA is clarifying that the remedial action selected for the Burbank Operable Unit is the extraction and treatment of 12,000 gpm of groundwater for twenty years;[26] the reference to clean up levels of 100 ppb TCE and 5 ppb PCE were meant as goals and are hereby superseded. Of course, EPA may, in the future, amend the remedial action selected or may require additional remedial action, including additional extraction, under another operable unit or in the final remedy. EPA will ensure that all ARARs not waived pursuant to CERCLA Section 121(d)(4)(A) are met in the final remedial action.

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26. This clarification that EPA meant to describe the selected remedy in terms of the size of the treatment plant rather than in terms of performance criteria (such as cleanup levels) was implied in the ROD by the following statements (page 28): ". . . the decision to pump and treat 12,000 gpm [as opposed to 16,000 gpm] was determined to be the most appropriate given the amount of technical information currently available" and "[i]f additional extraction is determined necessary, EPA would again go out for public comment with a Proposed Plan before signing another Record of Decision." This definition of the ROD is also supported by the description of Alternative 5, Phases 1 and 2 on pages 18 to 19 of the ROD and the decision to adopt Alternative 5, Phase 1 as the selected remedy under the ROD (page 28 of the ROD), since the major difference between the two phases was that Phase 2 would have involved additional extraction capacity. With this ESD, EPA clears up any ambiguity resulting from the reference in the ROD to specific capture zone levels.

5. ARARS

For any reinjection that occurs, the reinjected water must meet all action-specific ARARs for such reinjection. ARARs applicable to the reinjected water include the following:

1. the Los Angeles Regional Water Quality Control Board's Water Quality Control Plan, which incorporates State Water Resources Control Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California." See Los Angeles River Basin Plan 4B, Chapter 4, Pages I-4-2 to I-4-3; and

2. Resource Conservation and Recovery Act ("RCRA") Section 3020. This Section of RCRA provides that the ban on the disposal of hazardous waste into a formation which contains an underground source of drinking water (set forth in Section 3020(a)) shall not apply to the injection of contaminated groundwater into the aquifer if: (i) such injection is part of a response action under CERCLA; (ii) such contaminated groundwater is treated to substantially reduce hazardous constituents prior to such injection; and (3) such response action will, upon completion, be sufficient to protect human health and the environment. RCRA Section 3020(b).

In order to comply with these ARARs, the nitrate concentrations in the water to be reinjected will have to be similar to the levels of nitrate concentration in the area of the aquifer where the reinjection will occur, and will also have to meet the current MCLs for drinking water for all other contaminants. The quality and quantity of the water to be reinjected, as well as

the duration of the project, will have to be considered to ensure that the reinjection does not unreasonably degrade the existing water quality. The reinjection, as provided for in this ESD, meets all the requirements of RCRA § 3020(b).

The ROD identified federal and state MCLs as ARARs for the treated effluent. Since the ROD was signed, the proposed state MCL for PCE was promulgated and is now final with a MCL of 5 ppb. EPA has determined that compliance with this level will adequately protect public health and the environment. Therefore, the state MCL of 5 ppb for PCE is now identified as an ARAR for the treated effluent.

Other than the MCL for nitrate, all state and federal MCLs in existence on the date this ESD is signed are ARARs for the treatment plant effluent. The MCL for nitrate is an ARAR for the water to be served as public drinking water.[27] If these MCLs change, or if other requirements are promulgated or modified, EPA will evaluate the selected remedy in light of the new requirements and determine whether these new requirements are applicable

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27. Since the ROD was signed, EPA has also issued the new National Contingency Plan ("NCP"), effective April 9, 1990. See 40 C.F.R. Part 300, 55 Fed. Reg. 8666 (March 8, 1990). The NCP now provides that the Maximum Contaminant Level Goals ("MCLGs") that are above zero will be attained where relevant and appropriate to the cleanup of ground or surface waters. 40 C.F.R. § 300.430(e)(2)(i)(B). No MCLG presently exists for nitrate. Therefore, the MCL of 45 ppm is the ARAR to be met for nitrate. A level of 10 ppm has been proposed as the federal MCLG for nitrate. In its discretion, EPA considered adoption of the proposed nitrate MCLG as a "to be considered" ("TBC") criteria and determined that requiring compliance with this 10 ppm level for the water to be served as public drinking water would not be appropriate. TCE and PCE have zero MCLGs, so this change in the NCP does not affect the identification of MCLs as the ARARs for these substances.

or relevant and appropriate and, if so, whether attainment (or waiver) of these requirements onsite is necessary to ensure that the remedy is protective of human health and the environment. See 40 C.F.R. § 300.430(f)(1)(ii)(B)(1); see also, 55 Fed.Reg. 8666, 8758 (March 8, 1990). Except as modified by this ESD, the ARARs for this interim action remain the same as described in the ROD.

V. SUPPORT AGENCY COMMENTS

See Section IV.1.c., State Acceptance comments, pages 23 -24, above.

VI. SUMMARY OF SELECTED REMEDY

The interim remedy for the Burbank Operable Unit, as selected in the ROD and as modified in this ESD, is extraction of groundwater from the aquifer zones containing the highest VOC concentrations, treatment of VOCs by stripping, and then: (a) reduction of nitrate by blending, and distribution of the water to the City of Burbank for use as a public water supply; and/or (b) reinjection of the VOC-treated groundwater into the aquifer (without blending). If the City of Burbank does not accept any or all of the treated water, then the remaining water will be reinjected into the aquifer in an area containing similar nitrate concentration levels and in a manner that complies with all ARARs for such reinjection.[28]

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28. As discussed before, EPA approval will be required to assure that the well locations will not interfere with other remedial actions or remedial investigation studies or further exacerbate the groundwater contamination.

For the reasons elaborated in the ROD and in this ESD, EPA considers this remedy to be the best balance of the nine criteria by which remedial action options are compared.[29]

VII. STATUTORY DETERMINATIONS

Considering the new information that has been developed and the changes that have been made to the selected remedy, the EPA believes that the interim remedy as altered by this ESD remains protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate to this interim remedial action, and is cost-effective. In addition, this remedy satisfies the statutory preference for remedies that employ treatment which permanently and significantly reduces the volume, toxicity or mobility of the hazardous substances as a principal element. It also complies with the statutory preference for remedies that utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. The changes and clarifications contained in this ESD are significant but do not fundamentally change the remedy. They do not include a change in the decision to do an interim pump and treat to inhibit spreading of the contaminated groundwater plume and to treat the VOCs through stripping.

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29. See 40 C.F.R. Section 300.430(e)(9)(iii) or page 12, above, for a list of these criteria.

VIII. PUBLIC PARTICIPATION ACTIVITIES

EPA has presented these changes to the remedy in the form of an Explanation of Significant Differences because the changes are of a significant, but not fundamental, nature. EPA held a thirty day public comment period on this ESD. All comments received and EPA's responses to them have been included in the Administrative Record. These additional provisions for public comment are not required for an ESD (see 40 C.F.R. § 300.435(c)(2)(i)); EPA provided this opportunity in order to encourage maximum public input into the ESD process for the Burbank Operable Unit Site.

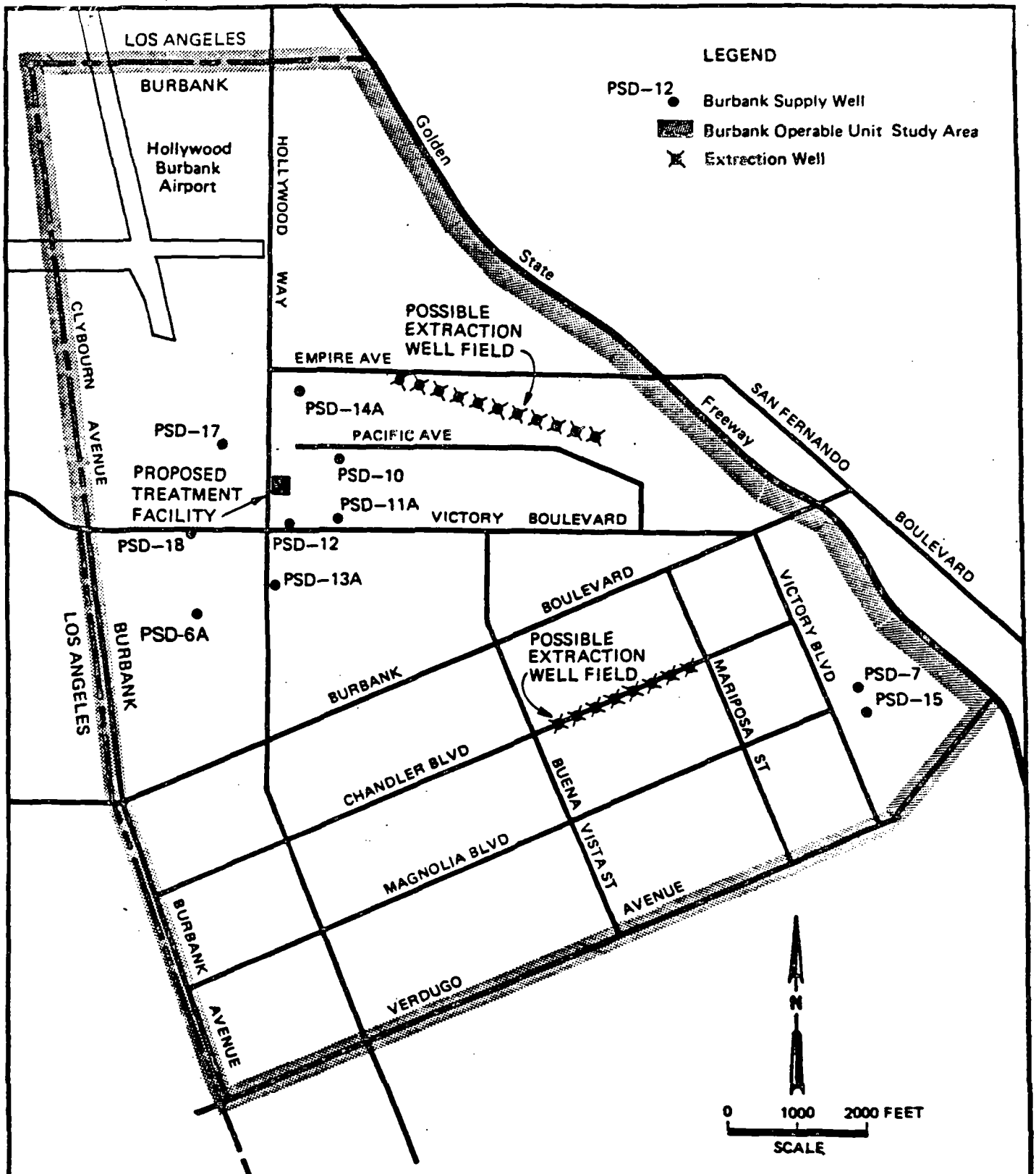
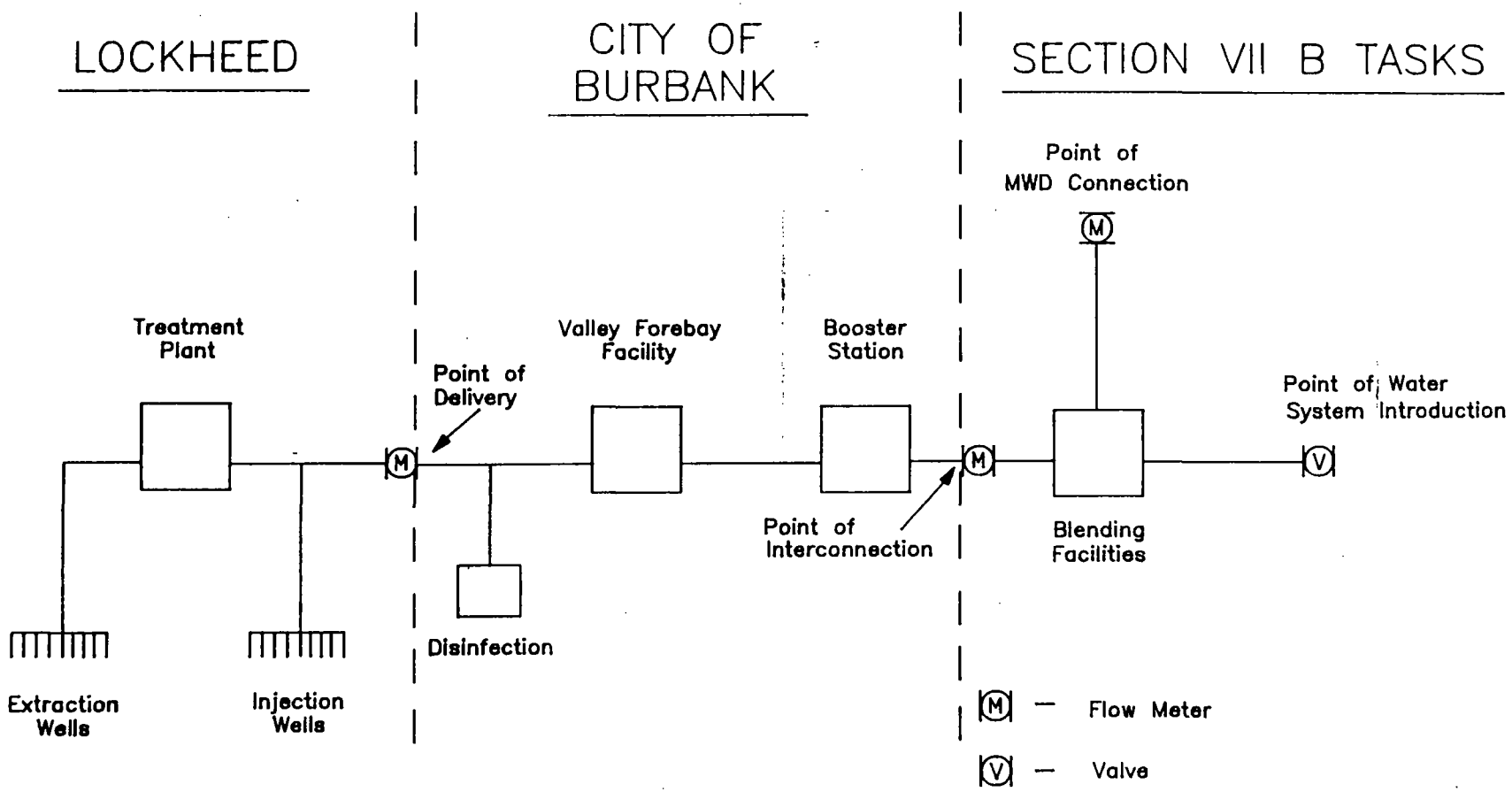
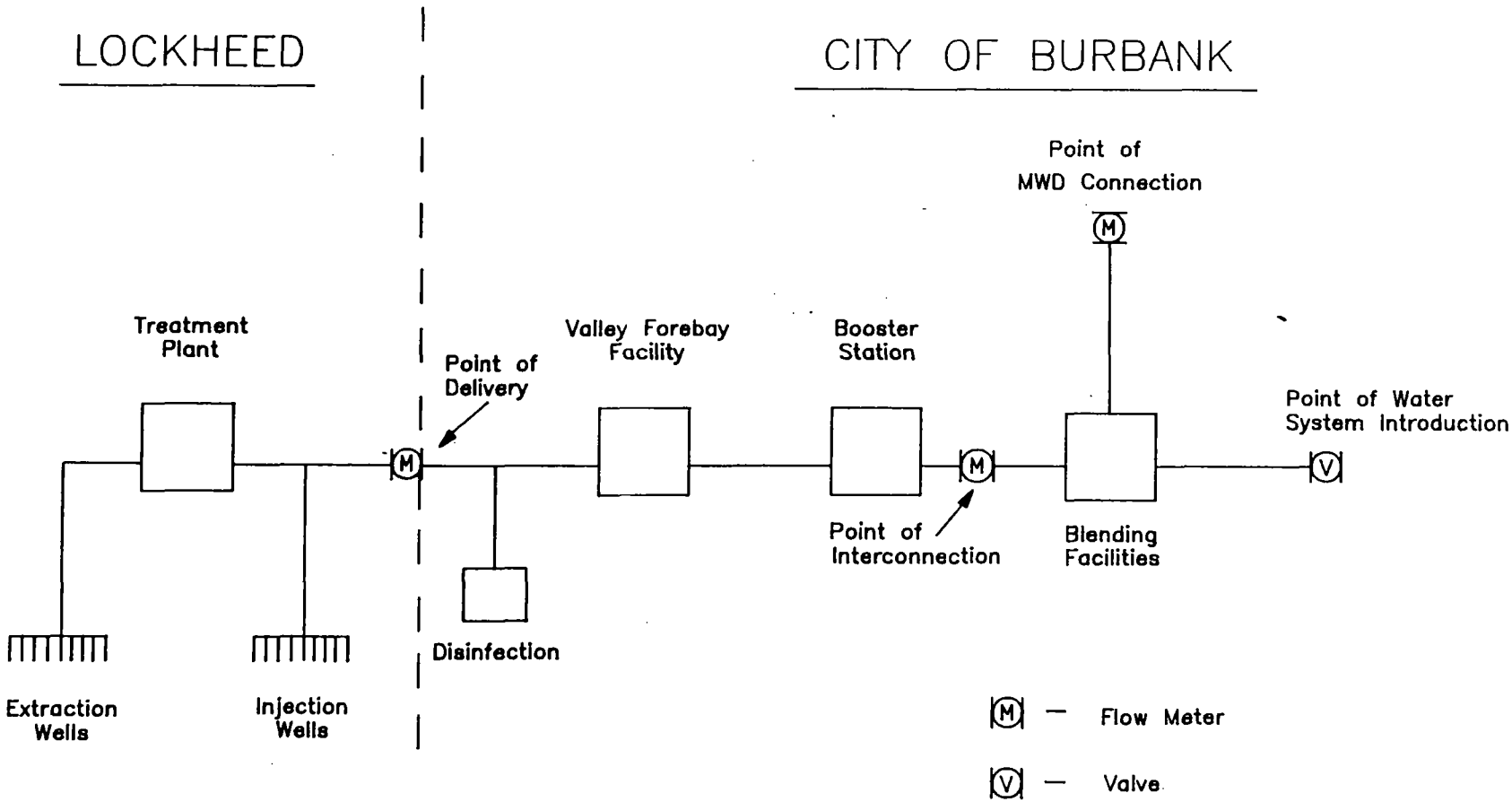


FIGURE 2 BURBANK OPERABLE UNIT STUDY AREA, LOCATION OF BURBANK SUPPLY WELLS, AND POSSIBLE LOCATIONS OF EXTRACTION WELLS AND TREATMENT FACILITY



Appendix E

BURBANK OPERABLE UNIT SITE
DESIGN & CONSTRUCTION RESPONSIBILITIES



Appendix E

BURBANK OPERABLE UNIT SITE
OPERATION & ROUTINE MAINTENANCE RESPONSIBILITIES

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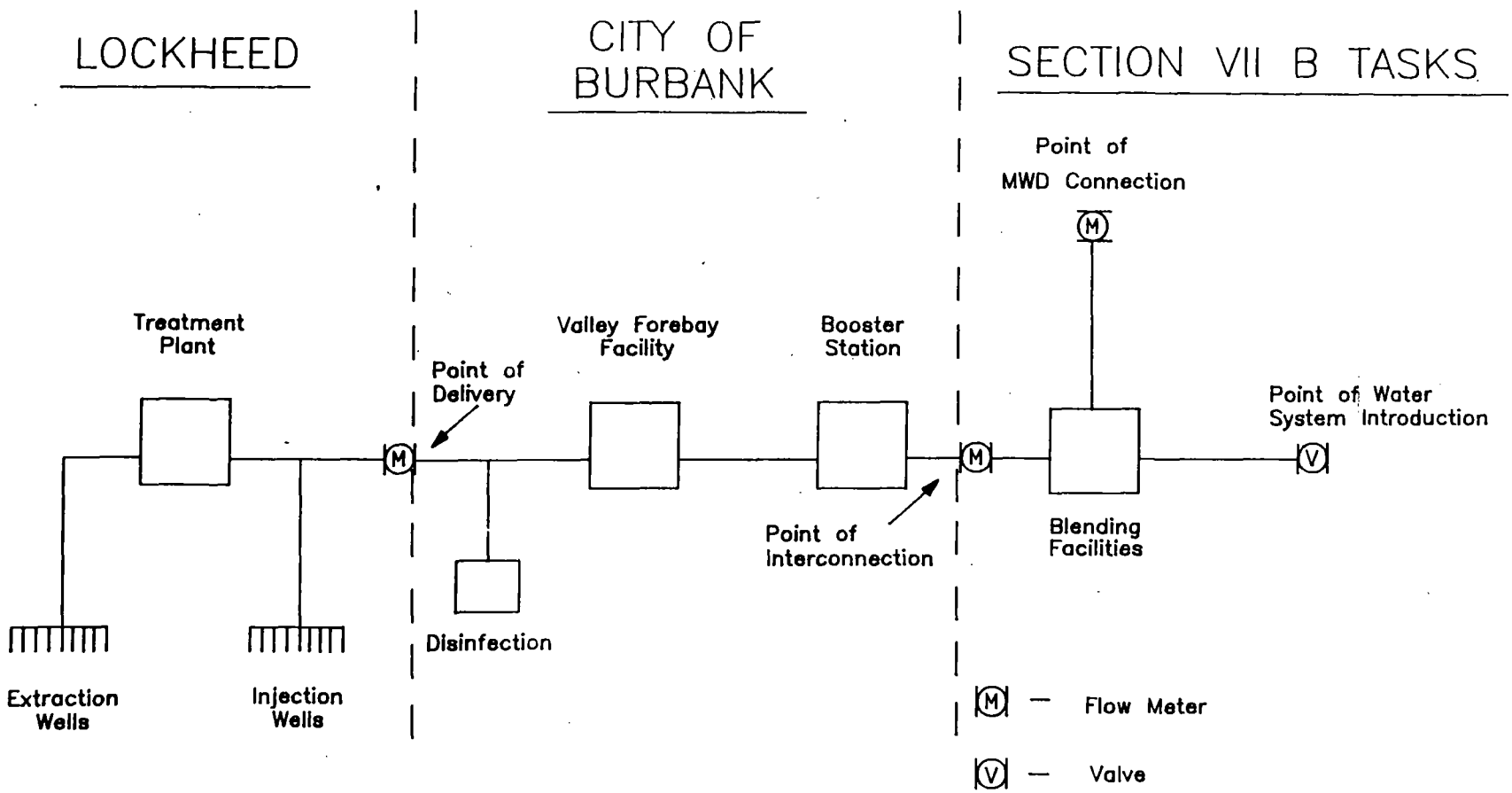
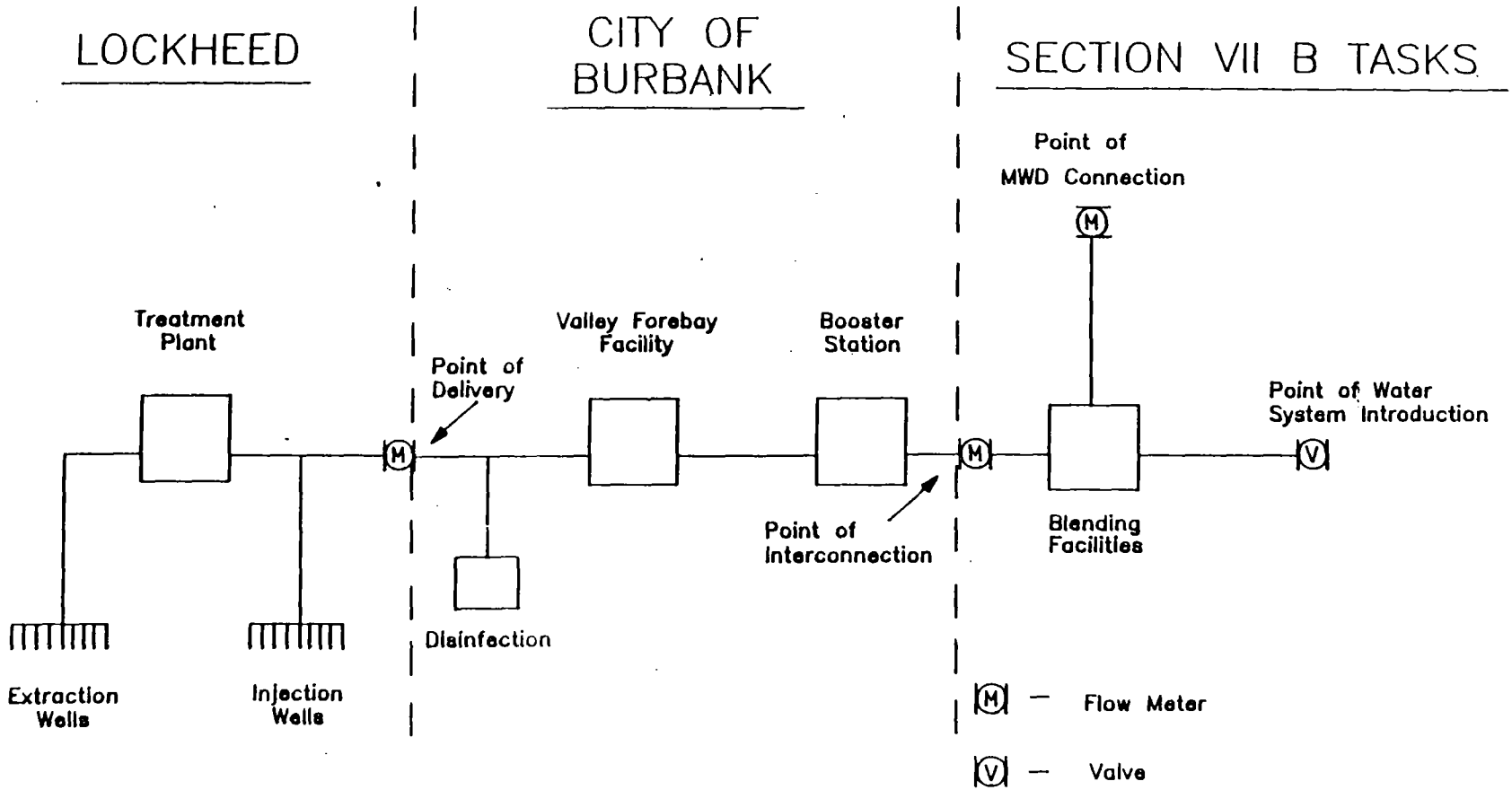
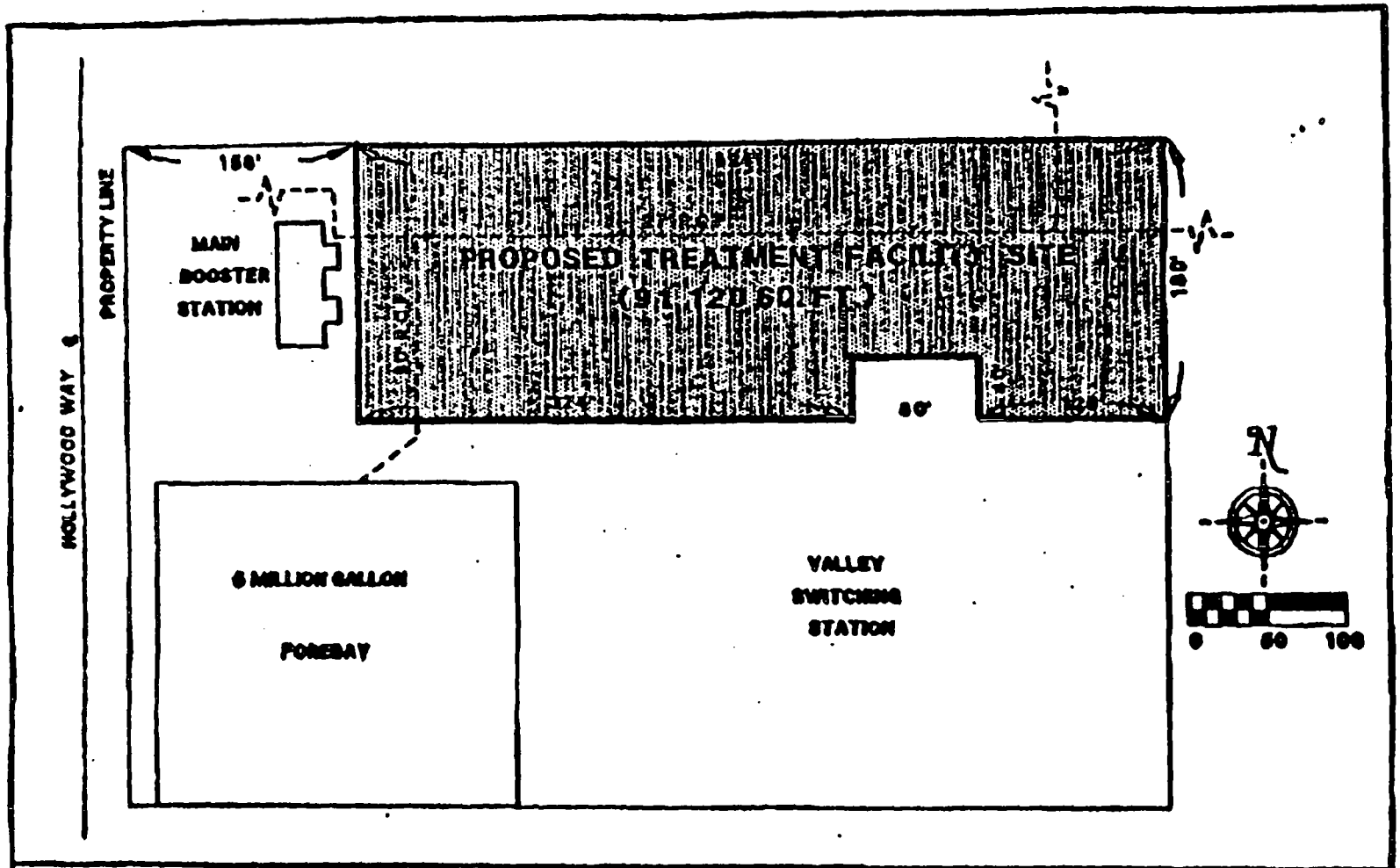


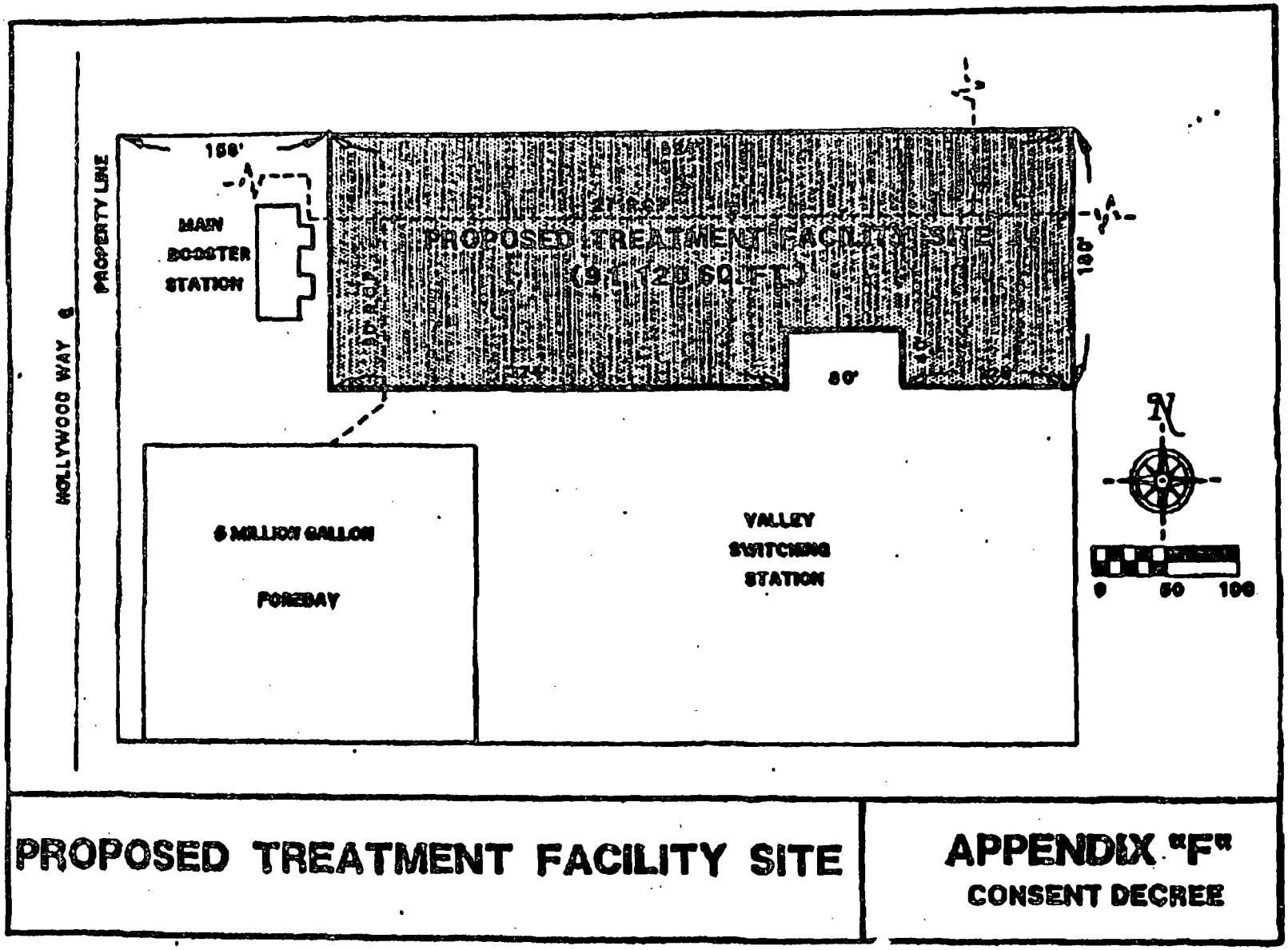
Appendix E
BURBANK OPERABLE UNIT SITE
NON-ROUTINE MAINTENANCE RESPONSIBILITIES



Appendix E
BURBANK OPERABLE UNIT SITE
NON-ROUTINE MAINTENANCE RESPONSIBILITIES



PROPOSED TREATMENT FACILITY SITE	APPENDIX "F" CONSENT DECREE



PROPOSED TREATMENT FACILITY SITE

APPENDIX "F"
CONSENT DECREE

APPENDIX D

Burbank

Statement of Work

I. General Provisions

A. Definitions: All words, as defined in the Consent Decree, have the same meaning when used herein.

B. Warranty: EPA has exercised its best efforts to include in this Statement of Work all activities necessary to fulfill the Remedial Action Work requirements. However, the Settling Parties acknowledge and agree that nothing in this Statement of Work or any deliverable approved by EPA pursuant hereto constitutes a warranty or representation, either express or implied, by the United States that compliance with this document and/or deliverables approved pursuant to this document will result in the achievement of the Performance Standards that the Settling Work Defendants are required by the Consent Decree to meet. Nothing in this Statement of Work or deliverables approved pursuant hereto shall be deemed to limit EPA's rights pursuant to Subpart B of Section XVII (Reservation and Waiver of Rights) of the Decree.

C. Site Description: See Consent Decree.

D. Remedial Action Work: See Consent Decree.

E. EPA approval: EPA "approval" of a Settling Work Defendant's Remedial Design Work and Remedial Action Work plans, specifications, processes and reports; the Remedial Design Architect(s)/ Engineer(s), Remedial Action Engineer(s), Remedial

Action Contractors/Subcontractors and Independent Quality Assurance team (IQAT); and any other submittals or people within the context of this Consent Decree is administrative in nature and designed to allow the Settling Work Defendants to proceed. The Settling Parties acknowledge and agree that EPA's approval of deliverables does not constitute a warranty or representation, either express or implied, by the United States that compliance with such deliverables will result in the achievement of the Performance Standards that the Settling Work Defendants are required by the Consent Decree to meet and shall not excuse Settling Work Defendants from any stipulated penalities for failure to meet such Performance Standards.

II. Schedule:

A. Dates

The schedule of deliverables for this Statement of Work is presented in Attachments 1 and 2 (for Lockheed and the City respectively) and shall be referred to as the Work Schedules. In these Work Schedules, EPA has provided an approximation of its review time; however, failure to review a deliverable within the estimated time shall not constitute a violation of the Decree by the United States. The Settling Work Defendants are required to submit deliverables within the time periods stated, and failure to do so constitutes a violation of the Decree. Unless otherwise stated, the time period for submittal of a deliverable by a Settling Work Defendant shall run from the date of that Settling Work Defendant's receipt of EPA's review comments with approval,

approval with conditions or modification of the deliverable pursuant to Subpart U of Section VII (Work To Be Performed) of the Decree. Pursuant to Subpart W of Section VII (Work To Be Performed) of the Decree, the Settling Work Defendants shall have 10 working days from receipt of EPA's written notice of disapproval, or such other longer time period as provided by EPA in the notice of disapproval, within which to correct an inadequacy in a written submittal and resubmit the written deliverable for approval.

B. Items

1. **Remedial Design Work/Remedial Action Work:** Remedial Design Work is defined as the Work required by this Consent Decree wherein, consistent with the ROD and ESD (as modified by Subpart F of Section VII (Work To Be Performed) of this Decree), this Decree and the National Contingency Plan (NCP), the engineering plans and technical specifications are to be developed by Settling Work Defendants for approval by EPA and on which implementation of the Remedial Action Work shall be based. It includes those activities to be undertaken by the Settling Work Defendants to develop the final plans, drawings, specifications, general provisions and special requirements necessary to the performance of the Remedial Action Work.

The final product of the Remedial Design Work is (a) technical package(s) that contain(s) or address(es) all the elements necessary to accomplish the Remedial Action Work, including, in addition to technical elements, all design support activities, permitting and access requirements, and institutional controls. The Remedial Design Work, on which the Remedial Action Work shall

be based, shall be adequate to ensure that the Remedial Action Work achieves the requirements of Section VII (Work To Be Performed) of the Consent Decree, including attainment of the performance standards in Subparts F, G and H of that Section.

Remedial Action Work is defined as the Work required by this Consent Decree (including all operation and maintenance required by this Consent Decree) to be undertaken by Settling Work Defendants to implement the final plans and specifications submitted by Settling Work Defendants pursuant to the Remedial Design Work Plan approved by EPA pursuant to Section VII (Work To Be Performed) of the Decree. The Remedial Action Work does not constitute all of the remedial action selected in the ROD (as modified by the ESD) and Subpart F of Section VII (Work To Be Performed) of the Decree. The Remedial Action Work includes the actual construction of the remedy and initial implementation of site cleanup, in accordance with the Remedial Design Work Plan and Section VII (Work To Be Performed) of the Consent Decree.

2. **Designation of Project Coordinator:** Within 15 days of the effective date of the Consent Decree, the Settling Work Defendants each shall submit in writing to EPA the name, title and qualifications of the Project Coordinator proposed to be used by that Settling Work Defendant in carrying out the overall coordination and management of the activities required of that Settling Work Defendant under this Consent Decree. The Project Coordinator may be a member of the Settling Work Defendant's staff, an independent contractor or a member of the Settling Work Defendant's Design Architect/Engineer's staff.

3. Oversight Representative: Addressed in the Consent Decree, Section IX (Project Coordinators).

4. Review of Design Architect(s)/Engineer(s): Pursuant to the Work Schedule, each Settling Work Defendant shall submit the name and qualifications of its Design Architect/Engineer to EPA. A Design Architect/Engineer may come from within the ranks of a Settling Work Defendant's own staff or through a contractual relationship with a private consulting entity. In either case, the factors to be considered in his or her selection shall include professional and ethical reputation, professional registration, demonstrated design experience and qualifications specifically required for the project, sufficient capacity (professional, technical and support staff) to accomplish the project within the required schedule, and sufficient business background and financial resources to provide uninterrupted services throughout the life of the project.

The submitted information about each Settling Work Defendant's Design Architect/Engineer shall include a written statement of qualification in sufficient detail to allow EPA to make a full and timely evaluation.

5. Monthly Progress Reports: These reports shall be prepared by each Settling Work Defendant pursuant to the Consent Decree, Section VII (Work To Be Performed) and shall meet any additional requirements pursuant to this Statement of Work.

6. Quarterly Quality Assurance Reports: These reports shall be prepared by each Settling Work Defendant pursuant to the Consent Decree, Section VII (Work To Be Performed).

7. Quality Assurance Project Plan(s): The plan(s) shall be prepared by each Settling Work Defendant pursuant to the Consent Decree, Section VIII (Quality Assurance) and this Statement of Work. These plan(s) shall also include a data management plan.

8. Health and Safety Plan: Each Settling Work Defendant shall submit a plan that describes the minimum health, safety and emergency response requirements for the pre-design, design and Remedial Action Work activities to be undertaken by that Settling Work Defendant. The plan shall be prepared in accordance with U.S. Occupational Safety and Health Administration ("OSHA") requirements and any other applicable requirements.

9. Plan for Satisfaction of Permitting Requirements: Each Settling Work Defendant shall submit a plan that describes the permitting requirements for the Remedial Action Work activities to be undertaken by that Settling Work Defendant and a strategy for meeting such requirements.

10. Remedial Design Work Plan: Pursuant to the Work Schedules, each Settling Work Defendant shall submit Remedial Design Work Plan(s) (Lockheed for each phase of Work and the City for phase one) for approval by EPA. The Remedial Design Work Plan shall describe that Settling Work Defendant's plan for implementation of the Remedial Design Work for that phase within the terms and conditions of the Consent Decree and this Statement of Work. It shall contain at a minimum the following:

Tenatative formation of the design team;

A detailed schedule for completion of the design;

Tentative treatment schemes; and

A plan that describes the necessary coordination with the other Settling Work Defendant and any person(s) that may conduct the tasks in Subpart B of Section VII (Work To Be Performed) of the Decree.

11. Preliminary Sampling Plan(s): Pursuant to Lockheed's Work Schedule, Lockheed shall submit Preliminary Sampling Plan(s). These plan(s) shall provide for the gathering of data relevant to the design, including, but not limited to, the following: sampling and analysis of monitoring wells, geochemical analysis, chemical analysis, hydrogeological modeling, aquifer tests and any other data critical to the placement and design of the extraction wells. The Preliminary Sampling Plan(s) shall also provide monitoring schedules for any chemical contaminant or hydrogeologic monitoring to be performed during the sampling period(s), consistent with the Consent Decree and this Statement of Work. At a minimum, sampling shall be required for volatile organics and inorganics on a frequent basis and for semi volatile organics, metals, pesticides/PCBs and radiation on a less frequent basis. The Preliminary Sampling Plan(s) shall specify objectives for sampling and analysis of groundwater from monitoring wells. With respect to gathering information (chemical or hydrogeologic) at monitoring wells, the particular wells that shall be sampled at a particular time shall be specified.

12. **Design Reviews:** Upon approval of the Remedial Design Work Plans by EPA, each Settling Work Defendant shall implement its EPA-approved Remedial Design Work Plan in accordance with the

Remedial Design schedules contained in the Work Schedules and Remedial Design Work Plans. Such implementation shall include EPA review and approval of plans, specifications, submittals and other deliverables and shall be done in accordance with such EPA-approved documents.

a. Conceptual Remedial Design Report(s): Conceptual Remedial Design begins with inital design and ends with the completion of approximately 30 percent of the design effort. Pursuant to the schedule established in the Work Schedules and Remedial Design Work Plans, Lockheed shall submit to EPA the Conceptual Remedial Design Report for each phase, and the City shall submit to EPA the Conceptual Remedial Design Report for phase one, which will consist of, at a minimum, the following:

1. Design criteria: During the conceptual remedial design phase, concepts supporting the technical aspects of the design shall be defined in detail;

2. Project delivery analysis: This shall describe the designer's strategy for delivering the project. It shall focus on the management approach to be used in carrying out the design and implementing the Remedial Action Work. Items to be addressed shall include procurement method and contracting strategy, phasing alternatives, health and safety considerations, review requirements, and contractor and equipment availability concerns;

3. Results of additional field sampling (Lockheed only);

4. Preliminary plans, drawings, and sketches;

5. Outline of required specifications;

6. Preliminary construction schedule; and

7. Results of Value Engineering.

b. Pre-final Remedial Design Report(s): Pre-Final Remedial Design Reports shall be submitted at the completion of approximately 65 percent of the design effort. Lockheed shall submit the report for each phase. The City shall submit the report for phase one. The Pre-Final Remedial Design Reports shall consist of a continuation and expansion of the Conceptual Remedial Design Report. The Pre-final Remedial Design Reports shall be submitted in accordance with the Work Schedule and Remedial Design Work Plan, shall address comments received from EPA during the Conceptual Remedial Design review and shall clearly show any modification of the design as a result of incorporation of these comments or as a result of any value engineering recommendations by the Design Architect/Engineer or others.

c. Final Remedial Design Report(s): Pursuant to the Work Schedules and Remedial Design Work Plan, Lockheed shall submit to EPA the Final Design Report for each phase and the City shall submit to EPA the Final Design Report for phase one, which shall consist of a continuation and expansion of the Pre-final Remedial Design Report. The Final Remedial Design report shall address comments received from EPA during the Pre-final Remedial Design review and clearly show any modification of the design as a result of incorporation of these comments or as a result of any value engineering recommendations by the Design Architect/ Engineer or others. It shall also include, at a minimum, the following:

Final plans and specifications; and

Preliminary construction schedule.

13. Review of Remedial Action Engineer: Prior to initiation of any construction activities, each Settling Work Defendant shall submit the name and qualifications of its Remedial Action Engineer to EPA, and shall state in such submission whether the Engineer was retained by way of a construction contract or through the assignment of that Settling Work Defendant's in-house resources. The selection process shall be based on professional and ethical reputation, previous experience in the type of construction activities to be implemented and demonstrated capability to perform the required construction activities. The information submitted shall include a statement of qualifications in sufficient detail to allow EPA to make a full and timely evaluation of the proposed Remedial Action Engineer.

14. **Review and Approval of Remedial Action Contractors/ Subcontractors:** Each Settling Work Defendant's selection process for selecting Remedial Action Contatctors/Subcontractors shall be based on professional and ethical reputation, previous experience in the type of construction activities to be implemented and demonstrated capability to perform the required construction activities. Prior to initiation of any construction activities, each Settling Work Defendant shall submit the names of its Remedial Action Contractors/Subcontractors to EPA and shall state in such submission whether the Contractors/Subcontractors were retained by way of a construction contract or through the assignment of that Settling Work Defendant's in-house resources.

Within thirty days of a request by EPA, the Settling Work Defendant(s) shall provide the qualifications of the Contractors or Subcontractors listed in their requests for approval by EPA. The information submitted shall include a statement of qualification in sufficient detail to allow EPA to make a full and timely evaluation.

15. Selection of the Independent Quality Assurance Team : Pursuant to the Work Schedules and prior to initiation of any construction activities, each Settling Work Defendant shall submit the names and qualifications of its Independent Quality Assurance Team (IQAT) for approval by EPA. The IQAT is used to provide confidence to the Settling Work Defendants that the selected remedy is constructed to meet project requirements, but its use does not release the Settling Work Defendants from any of their obligations under this Consent Decree. The IQAT implements the Construction Quality Assurance Project Plan by selectively testing and inspecting the work of the Remedial Action Engineer(s). Each IQAT is required to be "independent" and autonomous from the Remedial Action Engineer(s) and may come from within the ranks of each Settling Work Defendant's own staff, the Remedial Design Architect/Engineer(s) organization, or through a separate contractual relationship with a private consulting entity. Selection shall be based on professional and ethical reputation, previous experience in the type of quality assurance activites to be implemented and demonstrated capability to perform the required activities. In addition, EPA approval will be based on the requirement for independence between the IQAT and

the Remedial Action Engineer(s). The information to be submitted shall include a written statement of qualifications in sufficient detail to allow EPA to make a full and timely evaluation of the IQAT's qualifications.

16. Remedial Action Work Plan(s): Pursuant to the Work Schedules, each Settling Work Defendant shall submit a Remedial Action Work Plan for EPA review and approval as follows: Lockheed for each phase and the City for phase one. The Remedial Action Work Plan shall describe each Settling Work Defendant's plan for implementation of the Remedial Action Work which that Settling Work Defendant is required to do pursuant to the terms and conditions of the Consent Decree and this Statement of Work and as set forth in the Final Design Report. It shall contain at a minimum the following:

Description of the work and field operations;

Detailed Construction Schedule;

Identification of the Remedial Action Team for construction management, including the key personnel, descriptions of duties and lines of authority;

A description of the roles and relationships of that Settling Work Defendant and that Settling Work Defendant's Project Coordinator, Independent Quality Assurance Team, Remedial Design Architect/Engineer and Remedial Action Engineer;

A plan that describes the necessary coordination with the other Settling Work Defendant and any person(s) that may conduct the tasks in Subpart B of Section VII (Work To Be Performed) of the Decree.

A plan for the administration of construction changes, including EPA review changes that may impact the implementation of the Remedial Action Work;

Transport and Disposal Plan for any contaminated material that is to be removed, transported and disposed of off-site;

The Construction Quality Assurance Project Plan (CQAPP): Refer to this Statement of Work, Section II.B.17 (Construction Quality Assurance Project Plan) for definition;

A plan to demonstrate compliance with the ARARs and any environmental statutes applicable off-site.

A Contingency Plan: Refer to this Statement of Work, Section II.B.18 (Contingency Plan);

A strategy for implementing the Contingency Plan, including the Air Monitoring Plan and the Spill Control and Countermeasures Plan;

An updated Health and Safety Plan for field construction activities; and

Procedures for data collection during the Remedial Action Work to validate the completion of the phases (Lockheed only);

17. **Construction Quality Assurance Project Plan(s):** Pursuant to the Work Schedules, each Settling Work Defendant shall submit to EPA for review and approval a Construction Quality Assurance Project Plan ("CQAPP") as part of its Remedial Action Work Plan. The CQAPP shall describe the site-specific components of the quality assurance program. The purpose is to ensure, with a reasonable degree of certainty, that the completed project meets or exceeds all design criteria, plans and specifications.

The Remedial Action Engineer is responsible for all activities necessary to manage, control and document work so as to ensure compliance with the project requirements, i.e., plans and specifications. The CQAPP is generally prepared by the Remedial Action Engineer and it should be indicative of the scope and complexity of the tasks as well as the project requirements. Although the overall content of the Construction Quality Assurance Project Plan ("CQAPP") depends on site-specific factors, at a minimum, the following elements shall be included in the plan:

Responsibilities and authorities of all organizations and key personnel involved in the design and construction of the Site Remedial Action Work done by that Settling Work Defendant, including lines of authorities;

The qualifications of the quality assurance personnel to demonstrate they possess the training and experience necessary to fulfill their identified responsibilities;

The observations and tests that will be used to monitor construction and the frequency of performance of these activities;

The sampling activities, sample size, sample locations, frequency of testing, acceptance and rejection data sheets, problem identification and corrective measures reports, evaluation reports, acceptance reports, final documentation, and a description of the provisions for the final storage of records, consistent with the requirements of the Consent Decree;

A copy of a signed letter which describes the responsibilities and delegates the authorities of the quality assurance manager;

Methods of performing the quality assurance/control inspections, including when inspections should be made and what to look for;

Quality assurance/quality control testing procedures for each specific test. This includes information which authenticates that personnel and laboratories performing the tests are qualified and that the equipment and procedures to be used comply with applicable standards;

Procedures for scheduling and managing submittals, including those of subcontractors, off-site fabricators, suppliers and purchasing agents; and

Reporting procedures, including frequency of reports and report formats.

18. **Contingency Plan:** Lockheed shall submit a Contingency Plan which is written for the local affected population in the event of an accident or emergency at the Site. It shall incorporate an Air Monitoring Plan and a Spill Control and Countermeasures Plan. The following is a preliminary list of items that shall be included in the Contingency Plan:

Name of the person responsible for responding in the event of an emergency incident;

List of key contacts in the the local community with phone numbers and addresses and the State and Federal agencies to be involved in the cleanup, as well as local emergency squads and hospitals;

First aid and medical information, including names of personnel trained in first aid, a clearly marked map with the locations of medical facilities and all necessary emergency phone numbers for fire, rescue and local hazardous material teams, and National Emergency Response Team;

Air Monitoring Plan: Air monitoring will be necessary to assure that the VOC-treatment system is meeting the South Coast Air Quality Management District's requirements. At a minimum, volatile organic compounds, primarily trichloroethylene (TCE) and perchloroethylene (PCE), as identified in the ROD and ESD, shall be the basis for pollutant sampling and measurement of pollutants in the atmosphere. Air monitoring may include personnel monitoring, on-site and/or off-site area monitoring, and perimeter monitoring. Trigger concentrations to implement the Contingency Plan shall be specified; and

Spill Control and Countermeasures Plan: This plan shall provide contingency measures for potential spills and discharges from material handling and/or transportation. It shall describe methods, means, and facilities required to prevent contamination of soil, water, atmosphere, uncontaminated structures, equipment or material from the discharge of wastes due to spills; provide for equipment and personnel to perform emergency measures required to contain any spillage and to remove and properly dispose of any media that become contaminated due to spillage; and provide for equipment and personnel to take decontamination measures that may be required to remove spillage from previous uncontaminated structures, equipment or material.

19. Pre-construction Conference: Prior to the start of construction for each phase, Lockheed shall schedule and initiate a pre-construction conference. At a minimium, the invitees shall include: Lockheed personnel and/or their representatives, including the Lockheed Project Coordinator; the City's Project Coordinator; the EPA Remedial Project Coordinator and any designated EPA Oversight Representatives; Lockheed's Remedial Design Architect/ Engineer; Lockheed's Independent Quality Assurance Team; Lockheed's Remedial Action Engineer; and representatives of the South Coast Air Quality Management District ("SCAQMD"), CA Department of Health Services ("DHS") and CA Regional Water Quality Control Board ("RWQCB").

Prior to the start of construction for phase one, the City shall schedule and initiate a pre-construction conference. At a minimium, the invitees shall include: City personnel and/or their representatives, including the City's Project Coordinator; Lockheed's Project Coordinator; the EPA Remedial Project Coordinator and any designated EPA Oversight Representatives; the City's Remedial Design Architect/ Engineer; the City's Independent Quality Assurance Team; the City's Remedial Action Engineer; and representatives of the South Coast Air Quality Management District ("SCAQMD"), CA Department of Health Services ("DHS") and CA Regional Water Quality Control Board ("RWQCB").

The main purpose of the pre-construction conferences will be to establish relationships among these parties, including lines of communication and lines of authority.

20. Construction Oversight: During the implementation of each phase of the Remedial Action Work, Lockheed shall be responsible for assuring access for the EPA Project Coordinator and/or the Oversight Representatives to the extent it is required to provide access pursuant to Section X (Site Access) of the Decree. Lockheed shall provide access to accommodations or office trailer space sufficient for the EPA Project Coordinator and/or Oversight Representatives to accomplish oversight duties with respect to Lockheed's activities, such as review of documents and reports.

During the implementation of each Phase of the Remedial Action Work, the City shall be responsible for assuring access for the EPA Project Coordinator and/or the Oversight Representatives to the extent it is required to provide access pursuant to Section X (Site Access) of the Decree. The City shall provide access to accommodations sufficient for the EPA Project Coordinator and/or Oversight Representatives to accomplish oversight duties with respect to the City's activities, such as review of documents and reports.

21. Pre-final / Final Inspection: Upon completion of the construction process for each phase of the Remedial Action Work, Lockheed shall conduct a pre-final and final inspection of completed Work. At a minimum, the invitees shall include Lockheed personnel and/or their representatives, including the Lockheed Project Coordinator; the City's Project Coordinator; the EPA Remedial Project Coordinator and any designated EPA Oversight Representatives; the Lockheed Remedial Design Architect/Engineer; the Lockheed Independent Quality Assurance Team; the Lockheed

Remedial Action Engineer; and representatives of the South Coast Air Quality Management District ("SCAQMD"), CA Department of Health Services ("DHS") and CA Regional Water Quality Control Board ("RWQCB").

Upon completion of the construction process for phase one of the Remedial Action Work, the City shall conduct a pre-final and final inspection of completed Work. At a minimum, the invitees shall include: City's personnel and/or their representatives, including the City's Project Coordinator; Lockheed's Project Coordinator; the EPA Remedial Project Coordinator and any designated EPA Oversight Representatives; the City's Remedial Design Architect/ Engineer; the City's Independent Quality Assurance Team; the City's Remedial Action Engineer; and representatives of the South Coast Air Quality Management District ("SCAQMD"), CA Department of Health Services ("DHS") and CA Regional Water Quality Control Board ("RWQCB").

The purpose of the inspections are to determine if all aspects of the plans and specifications have been implemented at the Site and whether the remedy is operational and functional. The final Operation and Maintenance Plan and the Operational Sampling Plan shall be presented for review sufficiently in advance of the pre-final inspection to allow for comments on these plans to coincide with inspection comments. If any items have not been completed, the Settling Work Defendant responsible shall develop a punch list which details the outstanding items still requiring completion or correction before completion of each phase of Work.

A final inspection shall be conducted when all the items on the punch list have been completed. All items indicated as requiring correction on the punch list shall be reinspected, and all tests that were originally unsatisfactory shall be conducted again. A final punch list shall be developed for any outstanding deficiencies still requiring correction.

22. Interim Remedial Action Report(s): At the completion of each phase of Work (pursuant to the Consent Decree, including this Statement of Work) and correction of all punch list items, Lockheed shall prepare an Interim Remedial Action Report which certifies that all activities for that phase which Lockheed is required to complete by the Consent Decree (including any incorporated documents such as plans and specifications) have been completed and that the remedy is operational and functional. The report shall include documentation (e.g., test results) substantiating that the performance standards have been met.

At the completion of the City's Work in phase one (pursuant to the Consent Decree, including the Statement of Work), the City shall prepare an Interim Remedial Action Report which certifies that all activities for that phase which the City is required to complete pursuant to the Consent Decree (including any incorporated documents such as plans and specifications) have been completed and that the related facilities are operational and functional. The report shall include documentation (e.g., test results) substantiating that the relevant performance standards have been met.

23. Operational Sampling Plan(s): Lockheed shall submit operational plans which define the sampling and data gathering methods to be used during construction and operation of the Remedial Action Work for each phase. This plan shall contain sufficient information to enable EPA to ascertain (1) the effectiveness of the Remedial Action Work which Lockheed is required to perform and (2) whether the performance standards which Lockheed is required to meet have been achieved. At a minimium, the plans shall include sampling and analysis of extraction wells, monitoring wells located near the extraction wells, treatment system influent and effluent, and any waste streams, including air discharges from the treatment plant and hazardous wastes. The Operational Sampling Plans shall also provide monitoring schedules for any chemical contaminant or hydrogeologic monitoring to be performed during the operation period(s), consistent with the Consent Decree (including this Statement of Work). At a minimum, sampling shall be required for volatile organics and for inorganics on a frequent basis and semi-volatile organics, metals, pesticides/PCBs and radiation on a less frequent basis. The Operational Sampling Plan(s) shall specify objectives and schedules for sampling and analysis of groundwater from the monitoring and extraction wells, sampling and analysis for treatment system influent and effluent, and sampling and analysis of air discharges from the treatment plant and hazardous wastes. With respect to gathering information (chemical or hydrogeologic) at monitoring and extraction wells, the particular wells that are

to be sampled at a particular time shall be specified. Sampling procedures or analytical procedures that are expected to deviate from the QAPP shall be specified.

The City shall submit an operational plan which defines the sampling and data gathering methods to be used during construction and operation of the Remedial Action Work the City has agreed to perform pursuant to Section VII (Work To Be Performed) of the Decree. This plan shall contain sufficient information to enable EPA to ascertain (1) the effectiveness of the Remedial Action Work which the City is required to perform and (2) whether the performance standards which the City is required to meet have been achieved. The Operational Sampling Plan shall provide monitoring schedules for any chemical contaminant monitoring to be performed during the operation period(s), consistent with the Consent Decree (including this Statement of Work). At a minimum, sampling shall be required for Inorganics and other drinking water standards as required by the City's amended domestic water permit from the California Department of Health Services. Sampling procedures or analytical procedures that are expected to deviate from the QAPP shall be specified.

24. Operation and Maintanance Plan(s): The Operation and Maintanance (O & M) Plan(s) shall incorporate or include as a reference the appropriate portions of the Operational Sampling Plan(s). The O & M Plan(s) shall specify how the monitoring schedule will be modified (1) to facilitate bringing the system back within specifications in the case of (a) an exceedance in the groundwater Treatment Plant effluent of any MCLs, except for

that for nitrate, or (b) a variance in the blending facility effluent for nitrate outside of the standard that is between 67 % of the MCL and 89 % of the MCL and (2) to document when the system is and is not in compliance.

The O & M Plan(s) shall describe in detail procedures and other steps that will be implemented to ensure that the following facilities continue to operate according to specification: (a) Lockheed's groundwater extraction, treatment, delivery and reinjection systems, and (b) the City's facilities necessary for (i) blending the treated groundwater with another water supply and (ii) accepting the water into the City's public water supply system. The procedures described shall include, but not be limited to, scheduled visual inspections, scheduled cleaning and/or backflushing, and the use of any chemical additives for corrosion and pH control. The O & M Plan(s) shall include a description of procedures to be implemented in the event that system defects or other problems are encountered during O & M activities.

25. **Preliminary Operation Report:** Lockheed shall submit to EPA and the City a Preliminary Operation Report ninety days prior to the phase one System Operation Date. At a minimum, this report shall include a list of nitrate concentration levels found in Lockheed's monitoring and extraction wells at the Site and an estimate of what nitrate concentration levels Lockheed expects to find in the VOC-treated groundwater to be delivered to the City.

26. **Nitrate Concentration Level Reporting:** On the 10th day of each month after the Phase One System Operation Date, Lockheed shall submit to EPA and the City a list of the nitrate

concentration levels found in the VOC-treatment plant effluent for each day that the plant is operating and sampled. On the 10th day of each month after the phase one System Operation Date, the City shall submit to EPA and Lockheed a list of the nitrate concentration levels found in the other water supply and the blending facility effluent for each day the facility is operating and sampled. Lockheed and the City may include these lists to EPA in their monthly progress reports.

27. Deliverables: Each Settling Work Defendant shall submit three copies of each deliverable for which it is responsible to the EPA Project Coordinator designated in the Section IX (Project Coordinators) of the Consent Decree and one copy of each deliverable to the EPA Office of Regional Counsel as designated in the Consent Decree, Section XXIII (Form of Notice).

28. System Operation Date: Pursuant to the relevant Work Schedule, Lockheed shall submit to EPA a written statement for each phase that the groundwater extraction and treatment system is in operation when the system construction is complete and the system begins operating (i.e., extracting and treating groundwater). The System Operation Date as defined in the Consent Decree shall be the first day in which Lockheed begins extracting and treating groundwater with the new facilities for each of the phases.

29. Final Inspection: At the end of the time period for which the Settling Work Defendants are required to perform the Remedial Action Work (all three phases) pursuant to the Consent Decree (including this Statement of Work), EPA shall conduct a

final inspection of the Remedial Action Work facilities. The inspection shall be a necessary part of approving or disapproving the Certificate of Completion pursuant to the Consent Decree, Section XXXIV (Termination and Satisfaction).

III. Other Requirements

A. Operation and Maintenance

1. Phase One

The appropriate Settling Work Defendants shall operate and maintain the phase one facilities required by the Consent Decree from the phase one System Operation Date until the phase two System Operation Date; provided, however, that:

a. After the first sixty days following the phase one System Operation Date, Lockheed may suspend operation of the phase one portion of the extraction, treatment and delivery facilities for which it is responsible, as described in Section VII (Work To Be Performed) of the Decree, for the following periods:

i. For maintenance periods up to the limit defined in Subpart C of this Section III;

ii. For any additional period of time earned through the Credit System described in Subpart B of this Section III; and

iii. In addition, for any period of time during which the City suspends operation of the facilities by which the City accepts treated water delivered to the Point of Delivery.

b. After the first sixty days following the phase one System Operation Date, the City may suspend operation of the phase one portion of the facilities by which the City accepts treated water delivered to the Point of Delivery and blending facilities for which it is responsible, as described in Section VII (Work To Be Performed) of the Decree, for the following periods:

i. For up to 25 days per calendar year; and

ii. For any period during which Lockheed does not deliver to the Point of Delivery water that meets the drinking water standards applicable on the date of delivery, other than the MCL for nitrate.

c. During only the first sixty days following the phase one System Operation Date, a Settling Work Defendant shall not be deemed to have violated the Decree by suspending operation of the facilities it is required to operate for this Phase.

2. **Phase Two**

The appropriate Settling Work Defendants shall operate and maintain the phase one and phase two facilities required by the Consent Decree from the phase two System Operation Date until the phase three System Operation Date; provided, however, that:

a. After the first sixty days following the phase two System Operation Date, Lockheed may suspend operation of the phase one and phase two portions of the extraction, treatment,

reinjection and delivery facilities for which it is responsible, as described in Section VII (Work To Be Performed) of the Decree, for the following periods:

i. For maintenance periods up to the limit defined in Subpart C of this Section III;

ii. For any additional period of time earned through the Credit System described in Subpart B of this Section III; and

iii. In addition, for any period of time during which the City suspends operaton of the facilities by which the City accepts treated water delivered to the Point of Delivery.

b. After the first sixty days following the phase two System Operation Date, the City may suspend operation of the phase one and phase two portions of the facilities by which the City accepts treated water delivered to the Point of Delivery and blending facilities for which it is responsible, as described Section VII (Work To Be Performed) of the Decree, for the following periods:

i. For up to 25 days per calendar year during; and

ii. For any period during which Lockheed does not deliver to the Point of Delivery water that meets the drinking water standards applicable on the date of delivery, other than the MCL for nitrate.

c. Lockheed shall construct reinjection facilities during phase two according to the following schedule:

i. By the phase two System Operation Date, Lockheed is required to construct the reinjection facilities necessary to reinject 5500 gpm; and

ii. If, during phase one, EPA determines that additional facilities are needed to reinject the water that is required to be extracted and treated by the phase one or phase two treatment systems but which the City cannot accept, Lockheed shall design, construct, operate and maintain such reinjection facilities (not to exceed a total of 12,000 gpm total system capacity) in accordance with a schedule to be developed by EPA. However, EPA must notify Lockheed regarding the need for such additional reinjection facilities before the phase two Remedial Design Workplan approval.

d. For any period during phase two for which reinjection facilities sufficient to reinject water not accepted by the City do not exist, Lockheed shall suspend operation of that portion of the extraction and treatment system that is producing the amount of water for which sufficient reinjection facilities do not exist; provided, however, that such suspension shall not excuse Lockheed from any stipulated penalties for any failure to design and construct reinjection facilities as required by the Decree and this Statement of Work.

e. During only the first sixty days following the phase two System Operation Date, a Settling Work Defendant shall not be deemed to have violated the Decree by suspending operation of the facilities it is required to operate for this Phase.

3. **Phase Three**

The appropriate Settling Work Defendants shall operate and maintain the phase one, phase two and phase three facilities required by the Consent Decree for a period of two years (not in-

cluding periods during which the extraction and treatment facilities are not operational or during which the treatment standards required by Section VII (Work To Be Performed), Subparts G.1, G.2, and G.3 of the Consent Decree are not being met) after the phase three System Operation Date. The Settling Work Defendants may suspend operations as provided below; provided, however, that if there is a suspension of the operation of the extraction and treatment system as permitted below or for any other reason, then the time period of such suspension shall not be included as part of the two-year period during which the facilities of all three phases must be operated.

a. After the first sixty days following the phase three System Operation Date, Lockheed may suspend operation of the phase one, phase two and phase three portions of the extraction, treatment, reinjection and delivery facilities for which it is responsible, as described in Section VII (Work To Be Performed) of the Decree, for the following periods:

i. For maintenance periods up to the limit defined in Subpart C of this Section III;

ii. For any additional period of time earned through the Credit System described in Subpart B of this Section III;

iii. In addition, for any period of time during which the City suspends operation of the facilities by which the City accepts treated water delivered to the Point of Delivery.

b. After the first sixty days following the phase three System Operation Date, the City may suspend operation of the phase one, phase two and phase three portion of the

facilities by which the City accepts treated water delivered to the Point of Delivery and blending facilities for which it is responsible, as described in Section VII (Work To Be Performed) of the Decree, for the following periods:

i. For up to 25 days per calendar year; and

ii. For any period during which Lockheed does not deliver to the Point of Delivery water that meets the drinking water standards applicable on the date of delivery, other than the MCL for nitrate.

c. Lockheed shall construct reinjection facilities during phase three according to the following schedule:

i. By the phase three System Operation Date, Lockheed is required to construct the reinjection facilities necessary to reinject an additional 3000 gpm (not to exceed a total of 12,000 gpm total system capacity);

ii. If during phase two, EPA determines that additional facilities are needed to reinject the water that is required to be extracted and treated by the phase one, phase two, or phase three treatment systems but which the City cannot accept, Lockheed shall design, construct, operate and maintain such reinjection facilities (not to exceed a total of 12,000 gpm total system capacity) in accordance with a schedule to be developed by EPA. However, EPA must notify Lockheed regarding the need for more reinjection facilities before the phase three Remedial Design Workplan approval; and

iii. If EPA determines that additional reinjection facilities are needed after EPA's approval of the phase three Remedial Design Workplan, Lockheed has not agreed to construct such facilities and EPA has not waived its authority to seek to have Lockheed constuct such facilities.

d. For any period during phase three for which reinjection facilities sufficient to reinject water not accepted by the City do not exist, Lockheed shall suspend operation of that portion of the extraction and treatment system that is producing the amount of water for which sufficient reinjection facilities do not exist; provided, however, that such suspension shall not excuse Lockheed from any stipulated penalties for any failure to design and construct reinjection facilities as required by the Decree and this Statement of Work.

e. During only the first sixty days following the phase three System Operation Date, a Settling Work defendant shall not be deemed to have violated the Decree by suspending operation of the facilities it is required to operate for this phase.

B. Pumping Credits

1. On the first day of each month following the phase one System Operation Date, Lockheed shall record the total volume of water treated by each of the groundwater Treatment Plants during the prior month.

2. The pumping credit earned by Lockheed each month during phase one shall be determined by the following formula:

$$PC = G1 - (WD)(60 \text{ minutes/hour})(24 \text{ hours/day})(X)$$

where:

PC = pumping credit, in gallons for the month under consideration, gallons/month;

WD = the average minimum day water demand for the month as defined in Subpart D of this Section, in gallons per minute (gpm), or 6000 gpm, which ever is less;

G1 = total gallons pumped by the phase one groundwater Treatment Plant for the month under consideration, gallons/month; and

X = Number of days in the month under consideration, in days/month

3. The pumping credit earned by Lockheed during each month of phase two shall be determined by the following formula:

$$PC = G1 + G2 - (9000 \text{ gpm})(60 \text{ min/hr}) \times (24 \text{ hr/month})(X)$$

where:

G2 = total gallons pumped by the phase two groundwater Treatment Plant for the month under consideration, gallons/month;

4. The pumping credit earned by Lockheed during each month of phase three shall be determined by the following formula:

$$PC = G1 + G2 + G3 - (12{,}000 \text{ gpm})(60 \text{ min/hr}) \times 24 \text{ hr/month})(X)$$

where:

G3 = total gallons pumped by the phase three groundwater Treatment Plant for the month under consideration;

5.a. Any negative or positive value for credits earned during the first sixty days after any System Operation Date shall be equal to zero. On the date sixty days after the System Operation Date, the pumping credit value shall be equal to the pumping credit on the date immediately before the System Operation Date for that phase.

b. The maximum credit Lockheed can accrue at any time during the life of the project is limited to 40 days worth of pumping as calculated in the following manner:

i. Maximum Phase One Pumping Credit:

6000 gal/min x 60 min/hr x 24 hr/day x 40 days = 345,600,000 gal.

ii. Maximum Phase Two Pumping Credit:

9000 gal/min x 60 min/hr x 24 hr/day x 40 days = 518,400,000 gal.

iii. Maximum Phase Three Pumping Credit:

12,000 gal/min x 60 min/hr x 24 hr/day x 40 days = 691,200,000 gal.

6. For each day that Lockheed is capable of delivering water to the Point of Delivery but is unable to do so due to the City suspending its facilities by which the City accepts treated water delivered to the Point of Delivery, Lockheed shall receive credit, in addition to the credit calculated in Subparts B.2 through B.5. of this Section, according to the following formulas:

a. Phase One Operation:

PC = (WD)(60 min/hr)(24 hr/day)(Y)

where: Y = Number of days during phase one the City suspends the facilities by which the City accepts treated water delivered to the Point of Delivery; and

WD = the average minimum day water demand for the month as defined in Subpart D of this Section, in gallons per minute (gpm), or 6000 gpm, which ever is less;

b. Phase Two and Phase Three Operations:

PC = 6,480,000 gallons/day, for each day during phase two or three that the City suspends the facilities by which the City accepts treated water delivered to the Point of Delivery

where: 6,480,000 = 4,500 gal/min x 60 min/hr x 24 hr/day.

7. Lockheed shall report to the EPA Project Coordinator, on a monthly basis, all pumping credits earned or lost during the preceding month.

8. Pumping credits gained during a particular phase of operation may be applied to any subsequent phase of operation, subject to the limitations specified in Subpart B.5 of this Section.

9. Pumping credits can be positive or negative in value and they are adjusted (by adding or subtracting) from the prior month's total.

C. Maintenance Allowances

1. During each phase of operation, Lockheed shall receive a maintenance allowance of 25 days per calendar year. Any unused maintenance allowance shall be carried over into the following calendar year, provided that the total accumulated maintenance allowance shall not exceed 50 days. Lockheed's annual maintenance allowance in terms of gallons for each phase of operation is as follows:

a. Phase One Annual Maintenance Allowance

6,000 gal/min x 60 min/hr x 24 hr/day x 25 days

= 216,000,000 gal

b. Phase Two Annual Maintenance Allowance

9,000 gal/min x 60 min/hr x 24 hr/day x 25 days

= 324,000,000 gal

c. Phase Three Annual Maintenance Allowance

12,000 gal/min x 60 min/hr x 24 hr/day x 25 days

= 432,000,000 gal

2. Pumping credits earned (or lost) in accordance with Subpart B of this Section will be added to (or subtracted from) the maintenance allowance specified in Subpart C.1 of this Section III on a monthly basis. Lockheed shall report to the EPA Project Coordinator, on a monthly basis, the adjusted maintenance allowance in effect at the end of the preceeding month, regardless of whether its positive or negative.

3. Upon receipt of this monthly report from Lockheed, EPA will review the maintenance allowance which includes the allowable maintenance days plus or minus the pumping credits accrued for that month. If at any time, Lockheed has a deficit for the adjusted maintenance allowance than Lockheed shall be deemed out of compliance. Each day of compliance is equal to the following:

Phase 1 = (WD)(60 min/hr)(24 hr/day), in gal/day

Phase 2 = (9000 gpm)(60 min/hr)(24 hr/day)

= 12,960,000 gal/day

Phase 3 = (12,000 gpm)(60 min/hr)(24 hr/day)

= 17,280,000 gal/day

Lockheed shall be subject to stipulated penalties for each day it is out of compliance. Lockheed shall be deemed out of compliance for each day that COMP is a negative number according to the following formula, provided that the gal/day will be rounded up to nearest day:

for Phase 1, COMP = MAIN / Phase 1

for Phase 2, COMP = MAIN / Phase 2

for Phase 3, COMP = MAIN / Phase 3

where:

COMP = Days out of Compliance, in days

MAIN = Adjusted Maintenance Allowance, which equals Maintenance Allowance plus or minus Pumping Credits, in gallons

D. Variable Values

1. Within 30 calendar days of the signing of the Consent Decree and on March 30 of each following year until Consent Decree termination, the City shall deliver to the EPA Project Coordinator and the Lockheed Project Coordinator a report on the City's historical water demand. The report will contain, at a minimium, the following information:

a. The water supply demand curves for the calendar years Y1, Y2, Y3, and Y4;

where:

Y1 = prior calendar year - 3 years;

Y2 = prior calendar year - 2 years;

Y3 = prior calendar year - 1 year; and

Y4 = prior calendar year.

b. The minimum day water demand, in gallons per minute, required in each month for the calendar years Y1, Y2, Y3, and Y4; and

c. The average minimum day water demand, in gallons per minute, for each month of the year as determined from the following formula:

WD = (WDY1 + WDY2 + WDY3 + WDY4)/4

where:

WD = the average minimum day water demand for the month, in gallons per minute;

WDY1 = the minimum day water demand for the month during the calendar year = prior calendar year minus 3 years, in gallons per minute;

WDY2 = the minimum day water demand for the month during the calendar year = prior calendar year minus 2 years, in gallons per minute;

WDY3 = the minimum day water demand for the month during the calendar year = prior calendar year minus 1 year, in gallons per minute; and

WDY4 = the minimum day water demand for the month during the prior calendar year, in gallons per minute;

2. During each calendar month of operation, Lockheed shall deliver an amount of treated groundwater to the Point of Delivery which is equal to or greater than the average minimum day water demand for that month, as defined in Subpart D.1.c. of this Section III, subject to the following limitations:

a. The maximum amount of water Lockheed is obligated to deliver to the Point of Delivery shall not exceed 6,000 gpm during phase one and 9,000 gpm during phase two and phase three;

b. The amount of water Lockheed is obligated to deliver to the Point of Delivery shall not exceed the City's demand (the average minimum day water demand for the month involved calculated pursuant to Section III.D.1.c. of this Statement of Work) for treated groundwater;

c. The amount of water Lockheed is obligated to deliver to the Point of Delivery shall not equal or exceed an amount which, due to the nitrate concentrations in the treated groundwater and the MWD supply water, will prevent the City from meeting the blending requirements specified in Section VII of the Decree (Work to be Performed); and

d. to the extent possible, subject to other limitations specified in this Statement of Work, Section III, Lockheed shall attempt to meet, in a timely manner, the City's demand for treated groundwater which is in excess of the average day minimium demand.

E. Routine Maintenance

Routine maintenance of the blending facilities shall include the electrical testing of monitoring and control equipment; proper charts and/or magnetic media for recording devices; chemicals or other reagents for nitrate monitoring equipment; labor and equipment necessary for the operation, maintenance and control of the MWD water supply line, the injection line for the water from the treatment plant and the blending facilities; and repair and replacement expense of capital facilities of the blending facilities not to exceed $1000.00 per calendar year.

F. Coordination

Lockheed and the City shall use best efforts to coordinate with each other and any pesrson(s) conducting the tasks described in Subpart B of Section VII (Work To Be Performed) of the Decree in all aspects of conducting their respective Work obligations, including the coordination of any operation and maintenance shutdowns allowed by this Statement of Work.

ATTACHMENT 1

LOCKHEED WORK SCHEDULE

PHASE One - First 6000 GPM

I. PRE-DESIGN ACTIVITIES:
TASK:

		Number of days after entry of Consent Decree
A.	Selection of Project Coordinator	15
B.	Selection of RD Architect/Engineer	30
	EPA Review and Approval	±60
	Finalize Contract	90
C.	Remedial Design Workplan	
	Draft	90
	EPA Review and Comment	±120
	Final RD Workplan	150
D.	Site QA Project Plan (QAPP) (Includes Data Management Plan)	
	Draft	90
	EPA Review and Comment	±120
	Final QAPP	150
E.	Site Health & Safety Plan	
	Draft	90
	EPA Review and Comment	±120
	Final Site Health & Safety Plan	150
F.	Submit Plan for Satisfaction of Permitting Requirements	
	Draft	90
	EPA Review and Comment	±120
	Final Permitting Plan	150

G.	Submit Preliminary Sampling Plan	
	Draft	90
	EPA Review and Comment	±120
	Final Preliminary Sampling Plan	150
II.	DESIGN ACTIVITIES	
A.	Submit Conceptual Remedial Design	
	*Draft	222
	EPA Review and Comment	±252
	Final Conceptual Design	282
B.	Submit Pre-Final Design	
	Draft	382
	EPA Review and Comment	±412
	Pre-Final Design	442
C.	Submit Final Remedial Design	
	Draft	502
	EPA Review and Comment	±532
	Final Remedial Design	562
III.	CONSTRUCTION OF REMEDIAL ACTION	
A.	Selection of Independent Quality Assurance Team	
	Notify EPA of Selection	400
	EPA Review and Comment	±415
	Final Selection	445

* This schedule allows for a six-month study period where data critical to placement of wells, determination of capture zone, hydrogeological modeling, and other pertinent data will be collected and analyzed. This information is critical to the Remedial Design Work.

B.	Selection of Remedial Action Engineer	
	Notify EPA of Selection	400
	EPA Review and Comment	±415
	Finalize Contract	445
C.	Selection of RA Contractors/Subcontractors	
	Notify EPA Selection	475
	EPA Review and Comment	±505
	Finalize Contracts	535
D.	Remedial Action Workplan (Includes CQAPP & Contingency Plan)	
	Draft	500
	EPA Review and Comment	±530
	Final RA Workplan	560
E.	Conduct Pre-Construction Conference	
F.	Submit the Operational Sampling Plan	
	Draft	670
	EPA Review and Approval	±700
	Final Operational Sampling Plan	730
G.	Submit the Operations and Maintenance Plan	
	Draft	670
	EPA Review and Comment	±700
	Final O & M Plan	730

IV. IMPLEMENTATION OF REMEDIAL ACTION

A.	Submit the Interim Remedial Action Report	
	Draft	820
	EPA Review and Comment	±866
	Final Interim Remedial Action Report	912

B.	Construction Complete	730
C.	System Operation Date	740
D.	Pre-final Inspection of Phase One	
E.	Final Inspection of Phase One	
F.	Full Operation (sixty days after System Operation Date for Phase 1)	

PHASE TWO - ADDITIONAL 3000 GPM

I. PRE-DESIGN ACTIVITIES:
TASK:

A.	Submit Plan for Satisfaction of Permitting Requirements	
	Draft	942
	EPA Review and Comment	±972
	Final RD Workplan	1002
B.	Remedial Design Workplan	
	Draft	942
	EPA Review and Comment	±972
	Final RD Workplan	1002
C.	Submit Preliminary Sampling Plan	
	Draft	942
	EPA Review and Comment	±972
	Preliminary Sampling Plan	1002

II. DESIGN ACTIVITIES

A.	Submit Conceptual Remedial Design	
	Draft	972
	EPA Review and Comment	±1002
	Final Conceptual Design	1032

B.	Submit Pre-Final Remedial Design	
	Draft	1120
	EPA Review and Approval	±1150
	Pre-Final Design	1180
C.	Submit Final Remedial Design	
	Draft	1240
	EPA Review and Comment	±1270
	Final Remedial Design	1300
III.	CONSTRUCTION OF REMEDIAL ACTION	
A.	Remedial Action Workplan (Including CQAPP & Contingency Plan)	
	Draft	1342
	EPA Review and Approval	±1372
	Final RA Workplan	1402
B.	Conduct Pre-construction Conference	
C.	Submit the Operation Sampling Plan	
	Draft	1342
	EPA Review and Approval	±1372
	Final Operational Sampling Plan	1402
D.	Submit Operations and Maintenance Plan	
	Draft	1342
	EPA Review and Comment	±1372
	Final O & M Plan	1402
IV.	IMPLEMENTATION OF REMEDIAL ACTION	
A.	Submit the Interim Remedial Action Report	
	Draft	1557
	EPA Review and Comment	±1597
	Final	1647

B. Construction complete 1467

C. System Operation Date 1477

D. Pre-final Inspection of Phase Two

E. Final Inspection of Phase Two

F. Full Operation (sixty days after System Operation Date for Phase Two)

PHASE THREE - ADDITIONAL 3000 GPM

I. PRE-DESIGN ACTIVITIES:
TASK:

A. Submit Remedial Design Workplan

Draft 1647

EPA Review and Comment ±1677

Final RD Workplan 1707

B. Submit Plan for Satisfaction of Permitting Requirements

Draft 1647

EPA Review and Comment ±1677

Final Permitting Plan 1707

C. Submit Preliminary Sampling Plan

Draft 1647

EPA Review and Comment ±1677

Finall Plan 1707

I. DESIGN ACTIVITIES

A. Submit Conceptual Remedial Design

Draft 1677

EPA Review and Comment ±1707

Final Conceptual Design 1737

B. Submit Pre-Final Design

Draft 1817

	EPA Review and Comment	±1847
	Pre-Final Design	1877
C.	Final Remedial Design	
	Draft	1937
	EPA Review and Comment	±1967
	Final Remedial Design	1997

III. CONSTRUCTION OF REMEDIAL ACTION

A.	Remedial Action Workplan (Including CQAPP and Contingency Plan)	
	Draft	2037
	EPA Review and Comment	±2067
	Final	2097
B.	Conduct Pre-Construction Comference	
C.	Submit Operational Sampling Plan	
	Draft	2037
	EPA Review and Comment	±2067
	Final O & M Plan	2097
D.	Submit O & M Plan	
	Draft	2037
	EPA Review and Comment	±2067
	Final O & M Plan	2097

IV. IMPLEMENTATION OF REMEDIAL ACTION

A.	Submit the Interim Remedial Action Report	
	Draft	2280
	EPA Review and Comment	±2310
	Final	2347
B.	Construction Complete	2190
C.	System Operation Date	2200

D. Pre-final Inspection of Phase Three

E. Final Inspection of Phase Three

F. Full Operation (sixty days after System Operation Date for Phase Three)

V. OPERATION & MAINTENANCE

O & M will continue 2 years after the System Operation Date for Phase Three, as described in Section VII (Work To Be Performed) of the Decree, and pursuant to any other requirements under the Decree and this Statement of Work.

ATTACHMENT 2

BURBANK WORK SCHEDULE

I. PRE-DESIGN ACTIVITIES:
TASK:

		Number of days after entry of Consent Decree
A.	Selection of Project Coordinator	15
B.	Selection of RD Architect/Engineer	30
	EPA Review and Approval	±60
	Finalize Contract	90
C.	Remedial Design Workplan	
	Draft	90
	EPA Review and Comment	±120
	Final RD Workplan	150
D.	Site QA Project Plan (QAPP) (Includes Data Management Plan)	
	Draft	90
	EPA Review and Comment	±120
	Final QAPP	150
E.	Site Health & Safety Plan	
	Draft	90
	EPA Review and Comment	±120
	Final Site Health & Safety Plan	150
F.	Submit Plan for Satisfaction of Permitting Requirements	
	Draft	90
	EPA Review and Comment	±120
	Final Permitting Plan	150

II. DESIGN ACTIVITIES

A. Submit Conceptual Remedial Design

Draft	222
EPA Review and Comment	±252
Final Conceptual Design	282

B. Submit Pre-Final Design

Draft	382
EPA Review and Comment	±412
Pre-Final Design	442

C. Submit Final Remedial Design

Draft	502
EPA Review and Comment	±532
Final Remedial Design	562

III. CONSTRUCTION OF REMEDIAL ACTION

A. Selection of Independent Quality Assurance Team

Notify EPA of Selection	400
EPA Review and Comment	±415
Final Selection	445

B. Selection of Remedial Action Engineer

Notify EPA of Selection	400
EPA Review and Comment	±415
Finalize Contract	445

C. Selection of RA Contractors/Subcontractors

Notify EPA Selection	475
EPA Review and Comment	±505
Finalize Contracts	535

D. Remedial Action Workplan (Includes CQAPP)

Draft	500
EPA Review and Comment	±530
Final RA Workplan	560

E. Conduct Pre-Construction Conference

F. Submit the Operational Sampling Plan

Draft	670
EPA Review and Approval	±700
Final Operational Sampling Plan	730

G. Submit the Operations and Maintenance Plan

Draft	670
EPA Review and Comment	±700
Final O & M Plan	730

IV. IMPLEMENTATION OF REMEDIAL ACTION

A. Submit the Interim Remedial Action Report

Draft	820
EPA Review and Comment	±866
Final Interim Remedial Action Report	912

B.	Construction Complete	730
C.	System Operation Date	740

D. Pre-final Inspection of Phase One

E. Final Inspection of Phase One

F. Full Operation (sixty days after System Operation Date for Phase One)

G. Update Plans as necessary if additional water is accepted in Phase Two

V. OPERATION & MAINTENANCE

O & M will continue through 2 years after the System Operation Date of Phase Three (Lockheed's work schedule), as described in Section VII (Work To Be Performed) of the Decree, and pursuant to any other requirements in the Decree and this Statement of Work.